for Macintosh

Canon

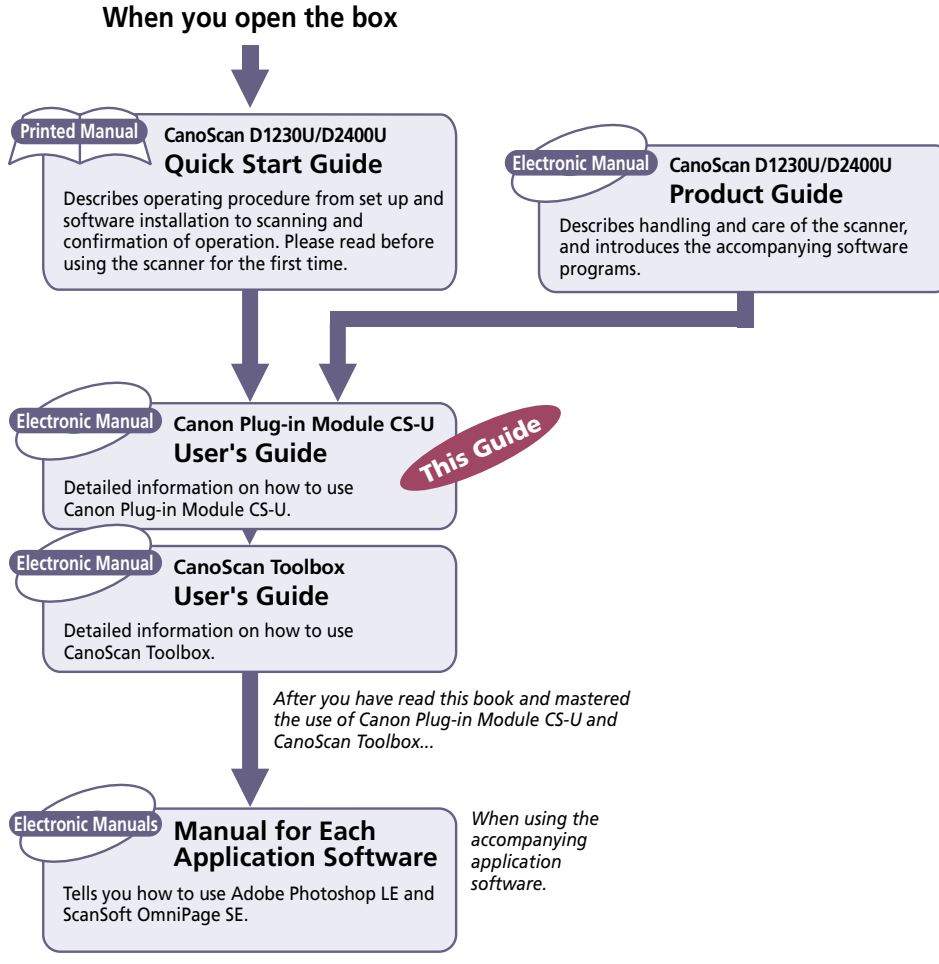
Canon Solutions

Canon Plug-in Module CS-U 4.1

for CanoScan D1230U/D2400U Color Image Scanner

User's Guide

How to Make Best Use of the Manuals


When you open the box
Printed Manual
CanoScan D1230U/D2400U
Quick Start Guide
Describes operating procedure from set up and software installation to scanning and confirmation of operation. Please read before using the scanner for the first time.
Electronic Manual
CanoScan D1230U/D2400U
Product Guide
Describes handling and care of the scanner, and introduces the accompanying software programs.
Electronic Manual
Canon Plug-in Module CS-U
User's Guide
This Guide
Detailed information on how to use Canon Plug-in Module CS-U.
Electronic Manual
CanoScan Toolbox
User's Guide
Detailed information on how to use CanoScan Toolbox.
After you have read this book and mastered the use of Canon Plug-in Module CS-U and CanoScan Toolbox...
Electronic Manuals
Manual for Each Application Software
Tells you how to use Adobe Photoshop LE and ScanSoft OmniPage SE.
When using the accompanying application software.

How to Use this Guide

This guide explains the operating procedures for Canon Plug-in Module CS-U (hereafter referred to as Plug-in Module CS-U), the Macintosh driver (plug-in software) used with Canon image scanners.
A plug-in is not an independent software program; it must be used within a plug-in compliant application, such as CanoScan Toolbox or Adobe Photoshop LE, to expand the capabilities of that program. Adding scanning capabilities to your computer is as easy as putting in a plug. Simply copy the Plug-in Module CS-U files to your computer.
Please read this guide to perform the installation procedures and scan. Store this manual in a handy location for future reference.

Where to Look

Quick Start Instructions → *p. 10*

The Quick Start Instructions provide a brief summary of commands and procedures that will assist in using Plug-in Module CS-U immediately.

Scanning Preparations (Required Reading) → *p. 13*

All users should read this section. This section describes the procedures and settings required before scanning, including positioning the original and selecting the output device, resolution, magnification and scanning mode.

Scanning (Required Reading) → *p. 29*

All users should read this section to learn the procedures for scanning images and saving scanned images.

Adjusting Scanned Images → *p. 35*

Read this section for details about how to adjust image brightness, color balance and other attributes. You can read this section as required.

Appendices

Read this section for troubleshooting tips, glossary terms and the index.

About the Conventions Used in this Guide

The following conventions are used in this guide to draw your attention to important information.

Caution:
This symbol is used to highlight procedural precautions and limitations. Always read these topics to avoid errors.

Hint:
This symbol is used to present helpful hints and supplemental information. Reading these topics is recommended to enhance your enjoyment of Plug-in Module CS-U.

Table of Contents

How to Make Best Use of the Manuals 2
How to Use this Guide 3
Table of Contents 4
Installing Plug-in Module CS-U 6
Control Panel Features 7
Scanning Procedures 8
Plug-in Module CS-U Special Features 9

Quick Start Instructions 10

STEP 1

Scanning Preparations 13

Displaying the Plug-in Module CS-U Control Panel 14
Positioning Originals 16
Previewing 17
Selecting the Output Device 18
Setting the Resolution and Magnification 19
Setting the Scan Mode 21
Verifying the Image before Scanning 23
Rotating the Image 24
Setting Preferences 25
- Output Device 25
- Aspect Ratio 25
- Unit 26
- Preview Window 26
- Reset Default Settings 27

STEP 2

Scanning 29

Setting the Scan Area 30
Zooming 31
Scanning 33
Saving Scanned Images 34
Scanning Film 35
Remove Dust and Scratches(CanoScan D2400U only) 38

STEP 3

Adjusting Scanned Images 39

Tone Adjustment 40
Histogram Settings 41
Tone Curve Settings 44
Brightness and Contrast Settings 47
Adjusting the Color Balance 49
Gamma Value Settings 50
Adjusting the Threshold Value 52
Auto Tone Correction 53
Unsharp Mask 54
Descreen 55
High-speed Scan Mode 56
Saving/Recalling Settings 57
Scanning Techniques 59

Appendices 60

Troubleshooting 61
Error Messages 65
Glossary 66
Index 71
Canon Customer Support Help Desk 73

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Installing Plug-in Module CS-U

Please install Plug-in Module CS-U with the other application programs according to the instructions in the "Install the Software" section of "Using the Macintosh Platform" of the *Quick Start Guide* supplied with the scanner.

Operating Environment

Hardware

- Power Macintosh, iMac, PowerBook or iBook with built-in USB ports (performance on Macintosh compatibles is not guaranteed)

Main Memory

- 32 MB or more (64 MB or more recommended)

Application Software

- CanoScan Toolbox
- Adobe Photoshop LE
- Other plug-in compatible application programs

Display

- 32,000 colors or more

System Software

- Mac OS 8.5 - 9

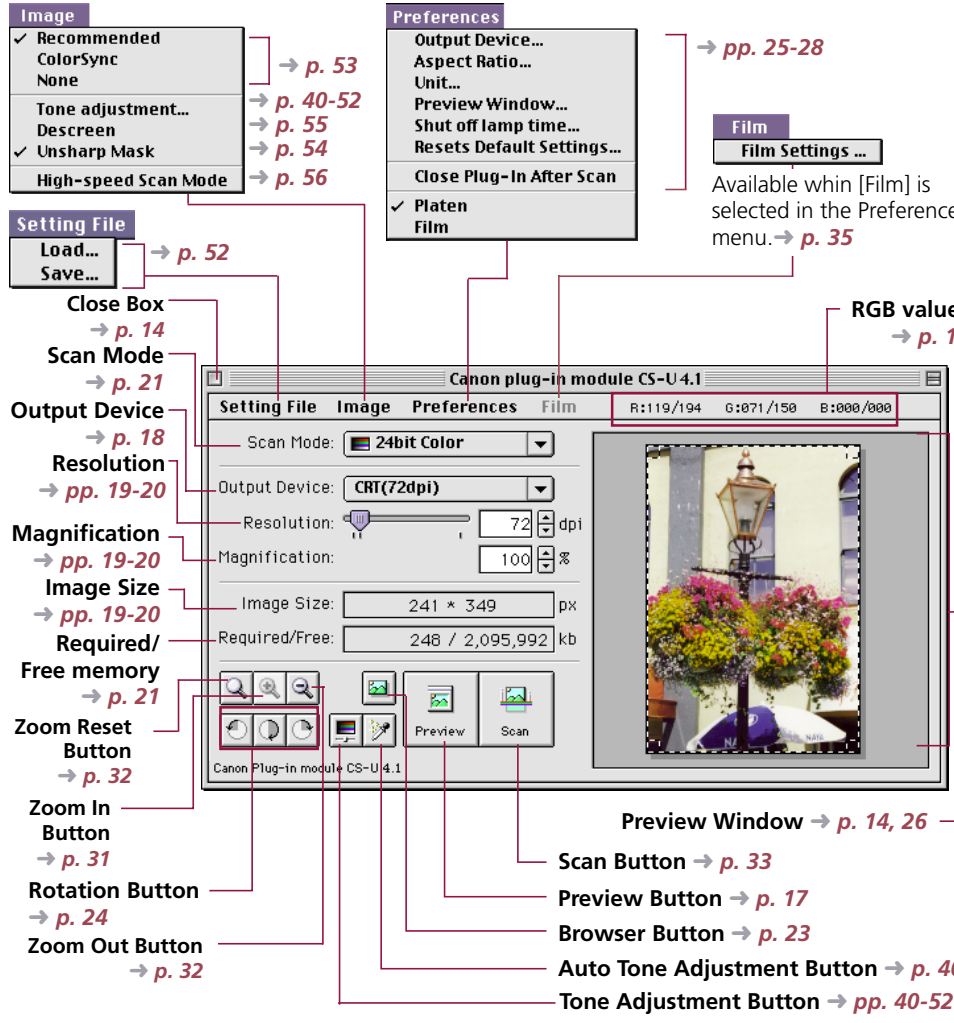
Caution

- The ColorSync™ Profiles file is installed along with Plug-in Module CS-U. ColorSync™ Ver. 2.0 or higher is required to use these profiles with the automatic color matching system *(p. 49)*.

Control Panel Features

When you need more information about a control panel button or menu, refer to the illustration below and go to the referenced page number for more details.

- The illustration may differ slightly from the version of Plug-in Module CS-U provided in your package.



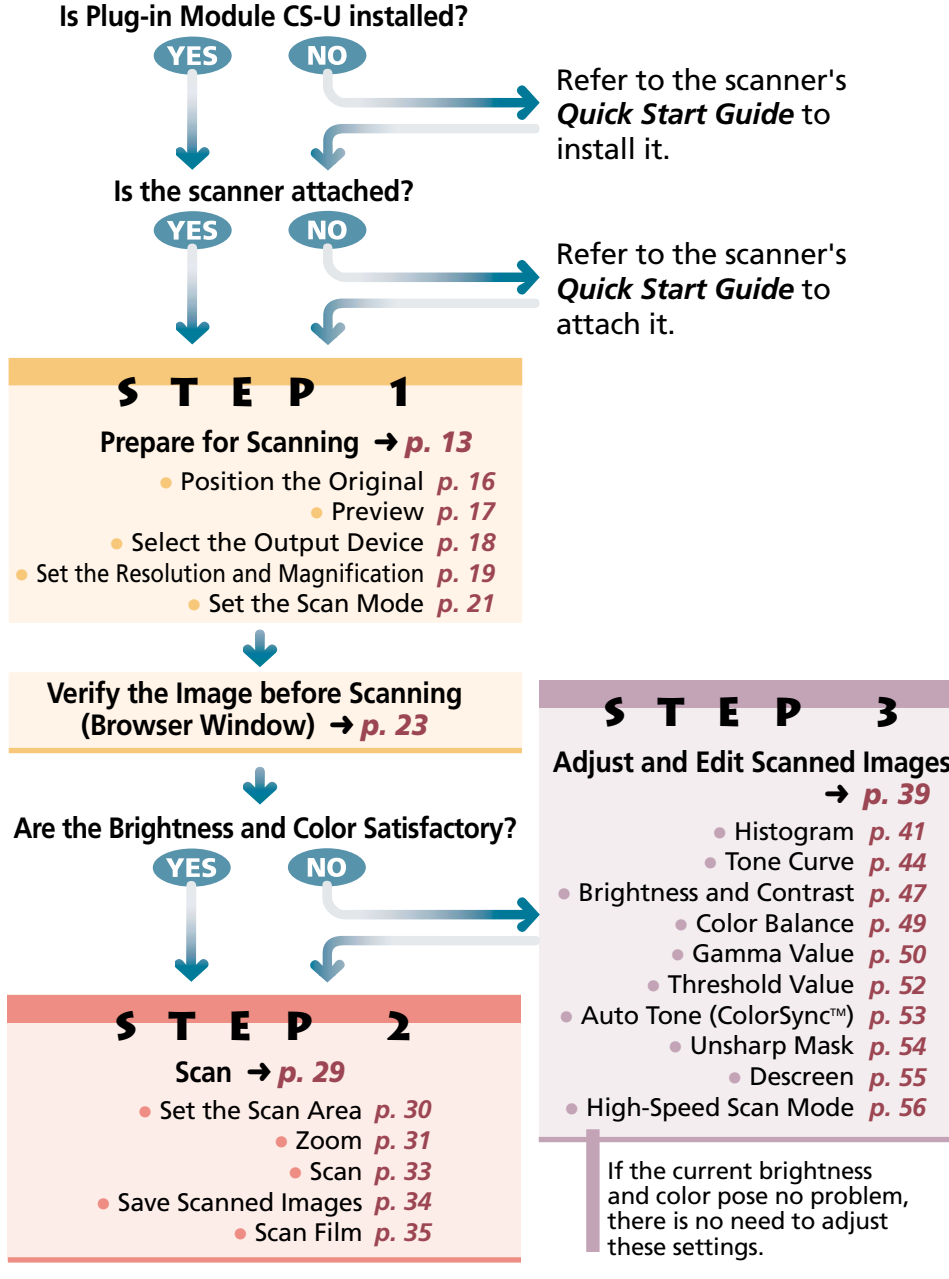
Hint

In this guide, menu items are marked in the following manner:

Select [Load] from the [Setting File] menu.

Scanning Procedures

Follow these procedures to use Plug-in Module CS-U.


Is Plug-in Module CS-U installed?
YES
NO
Refer to the scanner's *Quick Start Guide* to install it.
Is the scanner attached?
YES
NO
Refer to the scanner's *Quick Start Guide* to attach it.
STEP 1
Prepare for Scanning → p. 13
Position the Original p. 16
Preview p. 17
Select the Output Device p. 18
Set the Resolution and Magnification p. 19
Set the Scan Mode p. 21
Verify the Image before Scanning (Browser Window) → p. 23
Are the Brightness and Color Satisfactory?
YES
NO
STEP 2
Scan → p. 29
Set the Scan Area p. 30
Zoom p. 31
Scan p. 33
Save Scanned Images p. 34
Scan Film p. 35
STEP 3
Adjust and Edit Scanned Images → p. 39
Histogram p. 41
Tone Curve p. 44
Brightness and Contrast p. 47
Color Balance p. 49
Gamma Value p. 50
Threshold Value p. 52
Auto Tone (ColorSync™) p. 53
Unsharp Mask p. 54
Descreen p. 55
High-Speed Scan Mode p. 56
If the current brightness and color pose no problem, there is no need to adjust these settings.

Plug-in Module CS-U Special Features

- **See the Results of Adjustments Immediately (Dynamic Preview)**

  Once in preview mode, the results of adjustments to scan mode settings and colors are promptly reflected in the preview image.
  Highly detailed adjustments can be performed easily because you can see the results of your changes as they are executed.

- **ColorSync™ (Ver 2.0 +) Compatible for Auto Tone Correction**

  Compatible with the Mac OS 8.5 ColorSync™ (Ver 2.0 +) color management software. This function automatically matches the color profiles of various devices, such as scanners, color displays and color printers, for optimal color reproduction.

- **Browser Function Permits Confirmation of the Real Image Before Scanning**

  The Browser function lets you check the image to be scanned in detail before commencing the scan. This function presents a much higher quality image than the preview function.

- **Histogram Function Realizes Beautiful Contrast**

  Simple operation allows you to achieve beautiful contrast with half-tone gradations.

- **Gamma Curve Adjusts Image Brightness**

  The Gamma Curve feature provides four methods you can use to refine in detail the level of image brightness until you are satisfied with the results.

- **Works within Image Processing Software for Easy Image Editing**

  Plug-in Module CS-U can be used to extend the functions of plug-in compatible image processing application programs.

- **Supports Optional Film Adapter Unit**

  Scans 35 mm, 120 format and 4x5 films when the optional Film Adapter Unit FAU-S12/S13 is attached. Just select the negative or positive film setting and set the film size to effortlessly create color prints with the auto brightness and tone adjustment features.

Quick Start Instructions

Follow the procedures below to start scanning immediately. If you require more information at any stage, read the pages referenced at each step.

1 Install Plug-in Module CS-U

This step is not required if you have already installed Plug-in Module CS-U following the instructions in the *Quick Start Guide*.

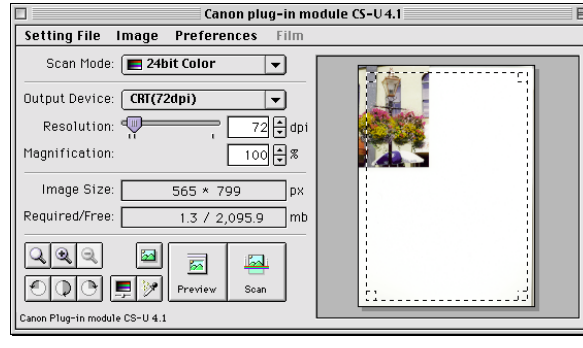
1. Place the CanoScan Setup Utility CD-ROM into the computer's CD-ROM drive. The CanoScan Setup Utility will start automatically. (If it doesn't, double click the [CD-ROM] icon, followed by the [setup] icon.)
2. Click [Install the Software] to install Plug-in Module CS-U and the other application programs.

2 Start Plug-in Module CS-U → *p. 14*

1. Start Adobe Photoshop LE or other plug-in compatible application.
2. Open the [File] menu, select [Acquire] and [CanonPI CS-U 4.1.0...].

3 Position materials for scanning and preview them. → *p. 16*

1. Position an item on the document glass (platen).
2. Click the Preview button.
   - The entire scanable area of the document glass will be previewed and displayed in the preview window.

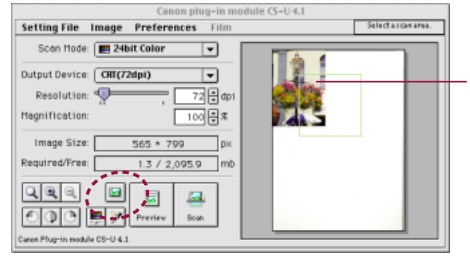


4 Set the Scan Mode, Output Device, Resolution and Magnification → *pp. 18-22*

- Scanning mode determines how the image is scanned ***(p. 21)***.
- Output device setting optimizes the images for particular uses ***(p. 18)***.
- Resolution determines the amount of detail in the scanned image ***(p. 19)***.
- Magnification determines the amount of enlargement or reduction of the output image display ***(p. 19)***.

5 Verify Image Quality with the Browser Function before Scanning → *p. 23*

1. Click on the [Browser] button.
   - The selection frame will appear.

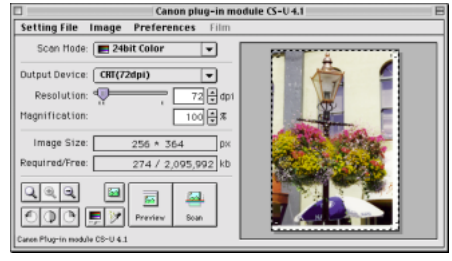


2. Move the selection frame to specify the area of the image you want verified and click the mouse button.
   - Plug-in Module CS-U will read the image and display the browser image.
3. After you have examined the browser image, click the mouse anywhere.

6 Specify the Area of the Image to be Scanned → *p. 30*

Select the area to be scanned by clicking and dragging the mouse pointer over the image.

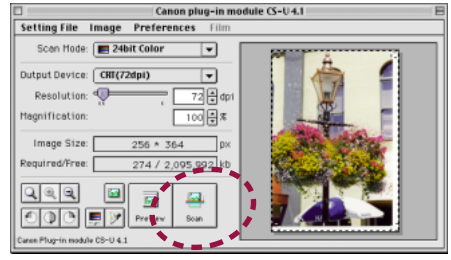
- You may find it convenient to use the zoom feature to select small areas or to select specific scan areas with precision ***(p. 31)***.



7 Scan the Image → *p. 33*

Click on the [Scan] button.

- Plug-in Module CS-U will scan the image.



- When the scan is complete, close the Plug-in Module CS-U control panel. The scanned image will appear in the Adobe Photoshop LE or other plug-in compatible application window as an "Untitled" file.

8 Save the Scanned Image → *p. 34*

Save the image with Adobe Photoshop LE or other plug-in compatible application, specifying a folder and file name.

When the amount of light of the lamp inside the scanner is insufficient, the message "Now adjusting lamp…" may be displayed. Wait as is, until the amount of light increases enough.

S T E P 1

Scanning Preparations

Step 1 presents the essential preparations for scanning.
The following procedures are explained on the indicated pages.

Displaying the Plug-in Module CS-U Control Panel → *p. 14*

▼

Positioning Originals → *p. 16*

▼

Previewing → *p. 17*

▼

Selecting the Output Device → *p. 18*

Setting the Resolution and Magnification → *p. 19*

Setting the Scan Mode → *p. 21*

▼

Verifying the Image Before Scanning → *p. 23*

Rotating the Image → *p. 24*

Setting Preferences → *p. 25*

Displaying the Plug-in Module CS-U Control Panel

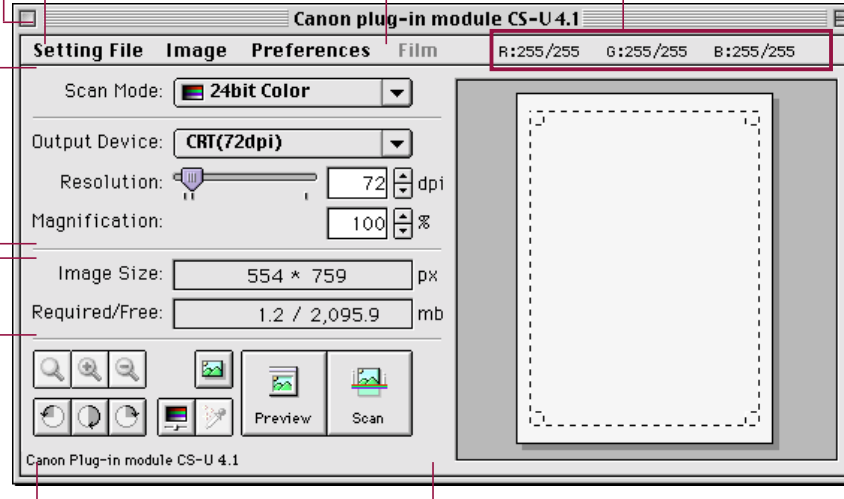
The Plug-in Module CS-U control panel is used to perform scans. Plug-in Module CS-U can be opened from CanoScan Toolbox or Adobe Photoshop LE and other plug-in compatible application programs.
To quit Plug-in Module CS-U, click on the close box at the top left of the control panel.

Adjusts the settings for the scanning job such as the scan mode, output device, resolution and magnification.

Close Box
Quits Plug-in Module CS-U.

Menu Bar
Click on any menu item to display more options in a pull-down menu.

RGB Values
Displays the R, G,and B values at the current cursor position (pre-adjusted value/post-adjusted value)



Buttons
Click the appropriate button to zoom, rotate or browse the image or correct colors, adjust the histogram or start the preview or scan.

The image size and disk size that were specified in the preview window are automatically displayed here.

Preview Window
Displays the image in preview mode.

Operating Procedures

The following provides an example of scanning from within Adobe Photoshop LE.

1 Verify that the scanner is attached to your computer and that the power is on.

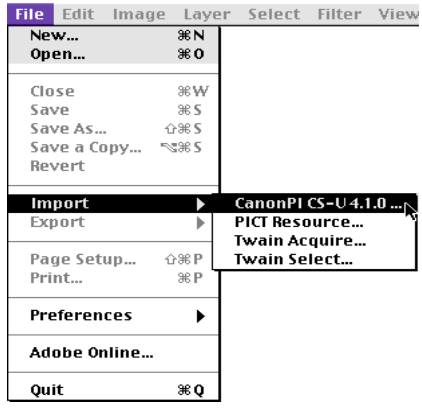
Read the *Getting Started* guide for instructions on how to connect the scanner.

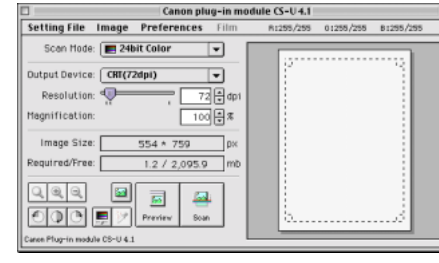
2 Start Adobe Photoshop LE.

3 Select Plug-in Module CS-U from within Adobe Photoshop LE.

Open the [File] menu, select [Import] and [CanonPI CS-U 4.1.0...].

The Plug-in Module CS-U control panel will display.





Caution

- Plug-in Module CS-U is not a stand-alone application program. It must be started from a plug-in compatible application program, such as CanoScan Toolbox or Adobe Photoshop LE.
- The size of the Plug-in Module CS-U control panel will vary according to the resolution of the computer display.
- The size of the control panel can be adjusted with the [Preview Window...] option in the [Preferences] menu ***(p. 26)***.

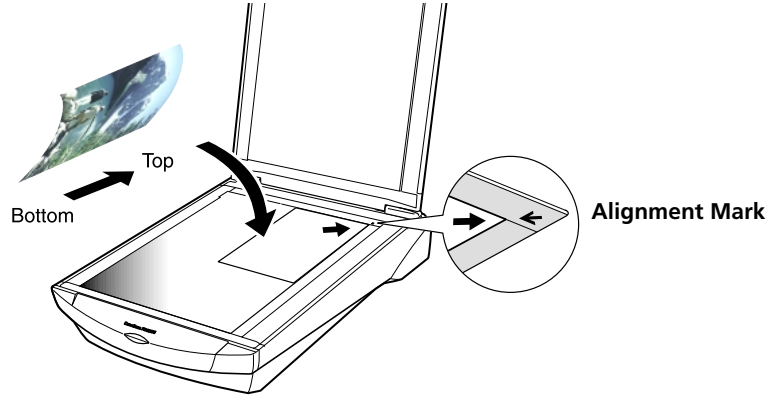
Positioning Originals

Place the original you intend to scan on the scanner's document glass (platen).

Procedures

1 Place the original on the scanner's document glass.

Open the cover and set the original face down on the scanner's document glass with the top edge at the back of the scanner. Align the original's corner with the alignment mark.



2 Close the cover carefully so the original does not shift out of position.

Caution

- Be careful not to dirty the document glass when placing items on it.
- If an original has distinct horizontal or vertical lines, you should try to position it on the document glass as squarely as possible to have the lines appear straight.
- The maximum scanable size is the area of the entire document glass.
- Straighten out curls or folds in originals before placing them on the document glass.
- To scan right to the edges of an item, position it approximately 3 mm away from the edges of the document glass (platen).

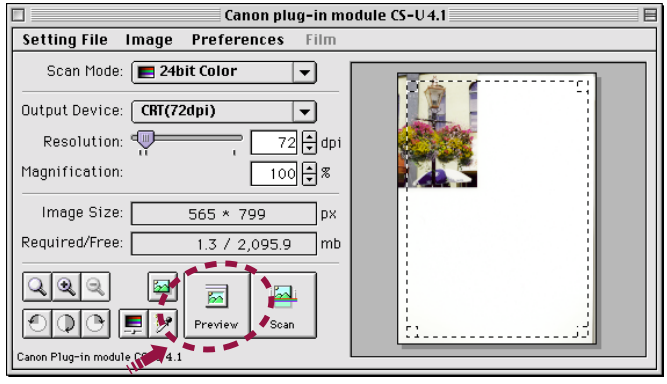
Previewing

The preview scan is a trial scan performed before the final scan that encompasses the entire scanable area of the document glass. The preview image is shown in the preview window. Use this image to specify a scan area and adjust the scan settings for the image.

Operating Procedures

1 Click on the [Preview] button.

- The image will be scanned and appear in the preview window.



Hint

- To change the size of the preview window, use the [Window Size] settings in the Preview Window Settings dialog *(p. 26)*.
- The Dynamic Preview function enables changes to settings, such as the scan mode and brightness, to be immediately reflected in the preview image.

Caution

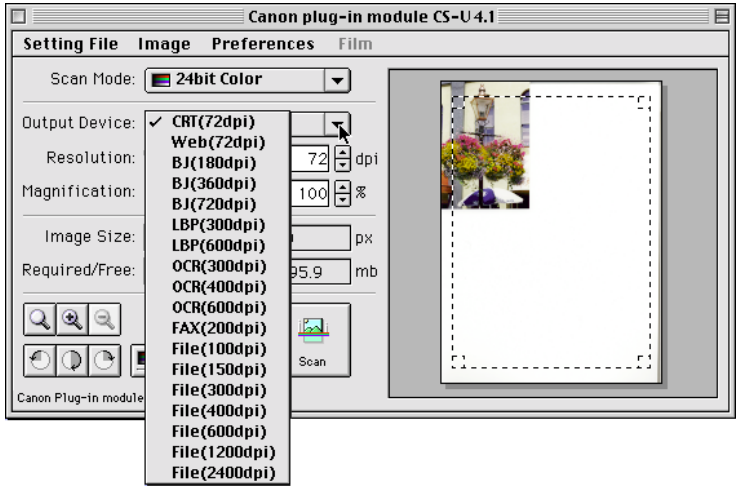
- The preview image provides only an approximation of the scan and the final results may differ to some degree from it.
- Calibration automatically starts when [Preview] or [Scan] button is clicked.

Selecting the Output Device

Use the following procedures to select the output device (printer, etc.) for the scanned image. Select the device that corresponds best to your output device and use of the image.

Operating Procedures

1 Click the arrow on the [Output Device] section of the control panel and select a device from the pop-up menu.

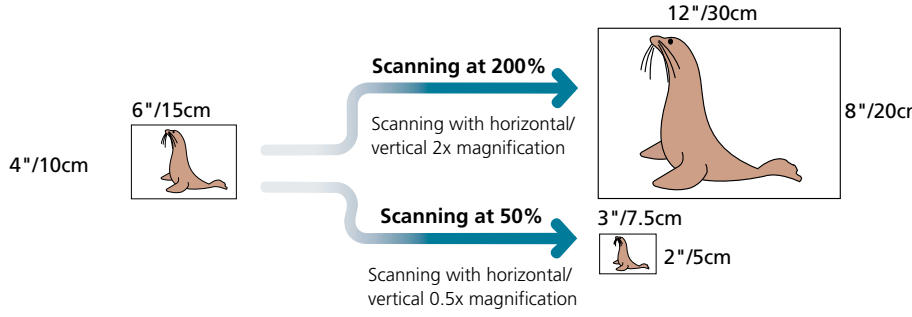


Caution

- You can set the device categories in the pop-up menu in advance. You can also add new devices to the pop-up menu. See *Setting Preferences* **(p. 25)**.

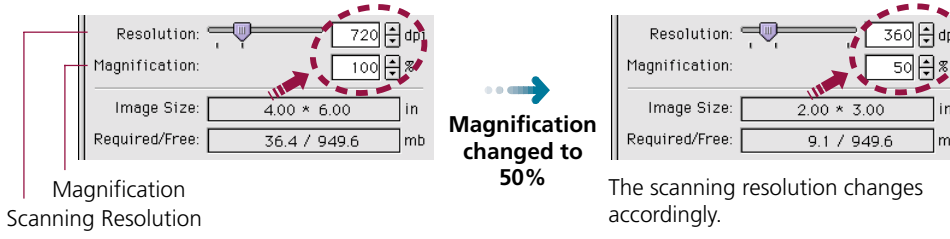
Setting the Resolution and Magnification

The magnification of an image can be changed before scanning to accommodate reproductions that are larger or smaller than the original. The settings can be changed in increments of 1%.



Changing the magnification setting causes the resolution display on the control panel to change correspondingly. This resolution setting is referred to as the "scanning resolution."

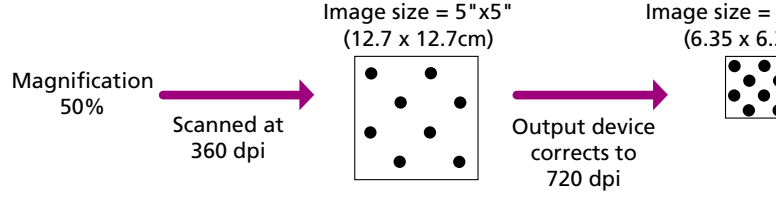
Output Device Resolution= 720 dpi, Magnification= 100%



Hint

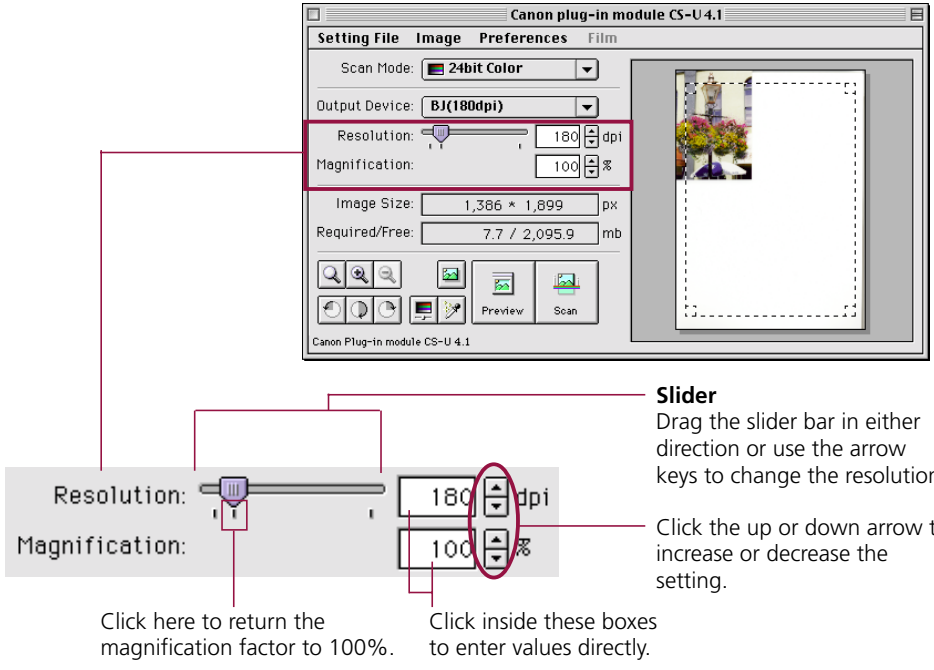
Magnification and Resolution

Why does the image size change with the magnification? Let us answer this with an example using a "BJ (720 dpi)" output device. If you were to scan an image with this device setting and set the magnification factor to 50%, the scanning resolution will automatically change to 360 dpi. At this setting, the image will be scanned at a resolution of 360 dpi and the output device will convert this to 720 dpi, shrinking the size of the output in the process because it will only have half the data with which to fill the space.



To Set the Magnification Factor

1 Set the desired magnification factor on the control panel.

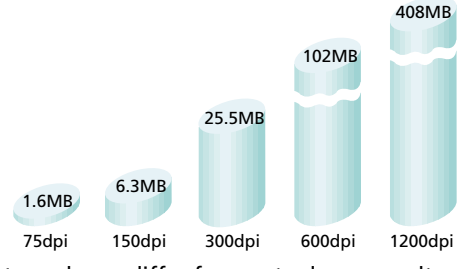


Hint

The Relationship Between Data Volume and Scanning Resolution

The higher the magnification and scanning resolution settings, the greater the file size of scanned images. There are certain inconveniences associated with large data volumes, such as longer processing times and the risk of running out of memory resources. You are advised against setting the resolution higher than necessary. For example, if you scan an A4 (21.0 x 29.7 cm (8.3 x 11.7 in.)) size image in the color mode, the amount of data varies according to the resolution.

A4 color image



* These numbers are approximate and may differ from actual scan results.

Setting the Scan Mode

When an image is scanned, it is read as a collection of "dots." The scan mode that is selected determines how each of these dots is represented in the output. The following four scan modes are available.

Black and White

Expresses images in two colors only: black or white. A dot is expressed as either black or white according to its brightness level and the value set as the threshold value, which can be freely set. Select this mode to output to a monochrome printer.

8 bit Grayscale

Expresses a dot in up to 256 shades of gray. Select this option for scanning black and white graphics and photographs.

Grayscale (14/16 bit)

Scans the image with finer tonal gradations. Select it when a particularly high-quality image is required. Grayscale (14 bit) (16,384 shades between black and white) can be selected with the CanoScan D1230U, and Grayscale (16 bit) (65,536 shades between black and white) with the CanoScan D2400U. The data obtained with this setting can only be used with Photoshop LE and certain other applications.

24 bit Color

Expresses a dot with 8 bits or 256 shades for each primary color - red, green and blue (RGB) - for a total of 24 bits. A dot can be expressed in up to 16.7 million distinct shades. Use this option for most color photographs.

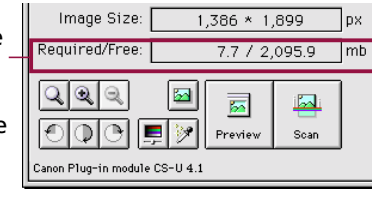
Color (42/48 bit)

Scans the image with finer color gradations. Select it when a particularly high-quality image is required. Color (42 bit) (16,384 colors per RGB channel) can be selected with the CanoScan D1230U, and Color (48 bit) (65,536 colors per RGB channel) with the CanoScan D2400U. The data obtained with this setting can only be used with Photoshop LE and certain other applications.

Hint

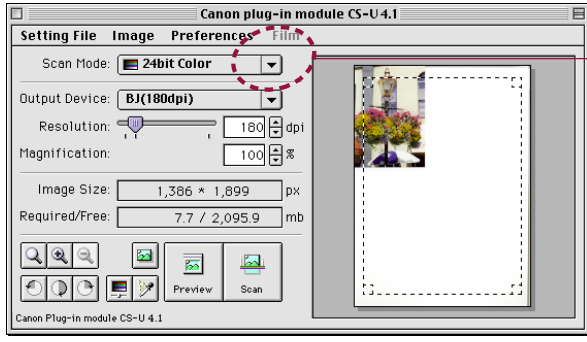
Scanning the same image in the four different scan modes produces different file sizes. By size, black and white mode requires the least disk space, followed in order by the grayscale and the color modes. Before scanning, check the data volume indicated on the control panel.

The numerator indicates the amount of disk space required for the scanned image while the denominator indicates the amount of disk space available. When the required space exceeds the available space or 2GB, the scan button is unavailable.



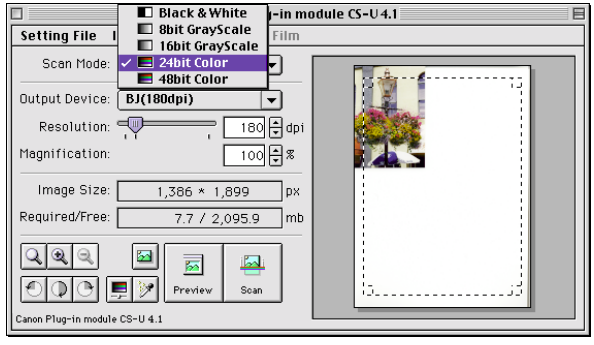
Operating Procedures

1 Click the arrow beside Scan Mode.



Selecting the box opens the pop-up menu.

2 Select a scan mode from the pop-up menu.



Caution

- If you select 14/16 bit Grayscale or 42/48 bit Color for a software application that does not support these options, the system may hang up when you attempt to execute the scanning job with either selection. Before you use these settings, check the specifications to determine whether or not 14/16 bit Grayscale and 42/48 bit Color scanning is supported. Adobe Photoshop (Ver. 3.0 or later) and Adobe Photoshop LE supplied with this package support these modes.
- If you scan an image with a version of Adobe Photoshop compatible with 42 bit Color, a 14/16 bit Grayscale or 42/48 bit Color image is scanned as a 16-bit Channel Mode image.
- 14/16 bit Grayscale and 42/48 bit Color images generally cannot be printed without modification. To print them out, first transform them into 8-bit Grayscale or 24-bit Color images, respectively.

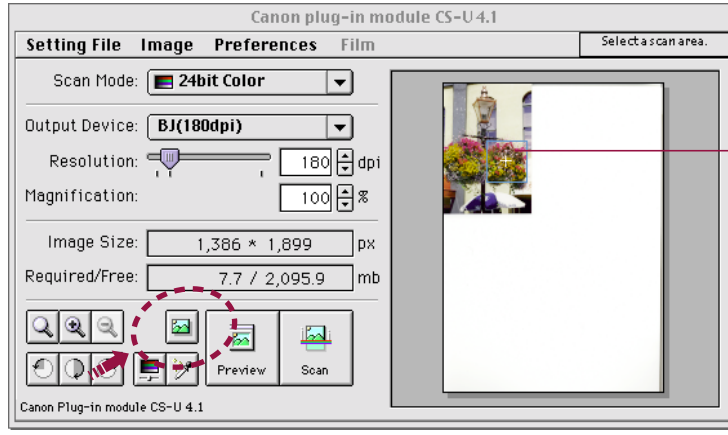
Verifying the Image before Scanning

Before initiating the final scan, it is advisable to check the intended results with the Browser function. The image in the browser window is more accurate than the one in the preview window, allowing you to verify the results more precisely before scanning.

To Verify the Image

1. Set the magnification and scan mode to the appropriate settings.

2. Click on the [Browser] button.
   - The selection frame will appear in the preview window to enable a portion of the image to be selected.
   - The size and shape of the selection frame cannot be changed because it is automatically determined by the scanning resolution.



3. Move the pointer in the selection frame inside the preview window.
   - The mouse cursor will change to a "+" sign shape.

4. Move the Selection Frame to the desired position with the mouse cursor.
   - Moving the mouse will move the Selection Frame.

5. Click the mouse button when the selection frame is in the correct position.
   - The image will be scanned and the browser image displayed in the middle of the monitor.

6. Once you have examined the browser image, click the mouse button again to close the browser window.
   - The browser window will close.
   - It does not matter where the mouse cursor is positioned to close the browser window.

Rotating the Image

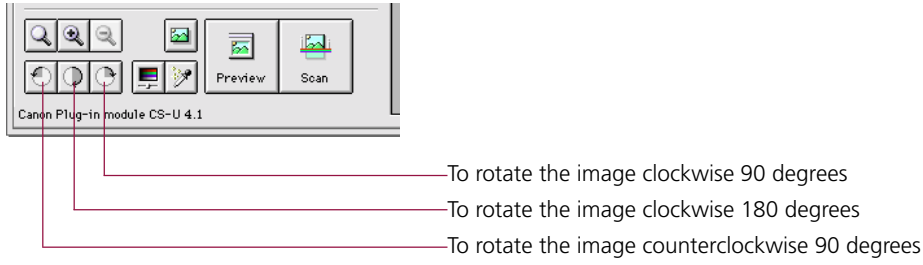
You can rotate the image in the preview window clockwise to the right or counterclockwise to the left in increments of 90 or 180 degrees. To rotate the image, click the appropriate button.

Caution

- If you rotate the image in the preview area, the scanned image will also rotate.

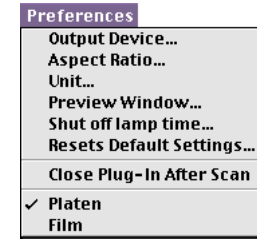
Operating Procedures

1. Use these buttons to rotate the image:


Preview
Scan
Canon Plug-in module CS-U 4.1
To rotate the image clockwise 90 degrees
To rotate the image clockwise 180 degrees
To rotate the image counterclockwise 90 degrees

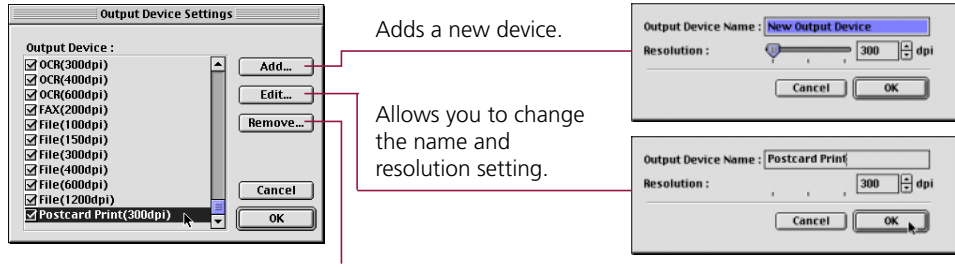
Setting Preferences

The Preference settings determine how Plug-in Module CS-U operates for the following options: output device (printer, files), scan area setting method, size display units, preview window size. You can change these options at any time or restore the factory default settings. To change any of these options, use the Preferences menu.



Output Device

Adds new output devices or file formats to the pop-up menu in the control panel. Devices are displayed by name. Resolution and other settings can be changed for the devices or the devices can be removed.



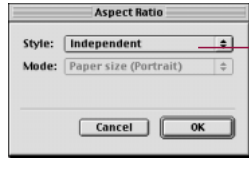
Allows you to remove a device from the list.

Hint

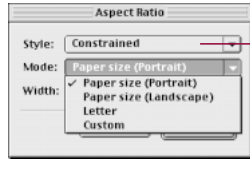
- The preset devices cannot be edited or deleted.

Aspect Ratio

To set the size of the area to be scanned, drag the mouse to size the selection frame in the preview window. The area inside the borders of the selection frame will be scanned.



When the [Independent] setting is selected, the selection frame can be freely resized and reshaped by dragging it.

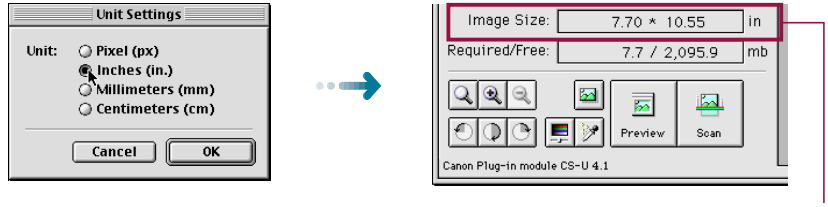


When the [Constrained] setting is selected, choose a paper size in the [Mode] option. The selection frame will have a fixed aspect ratio (height to width ratio) when it is resized in the preview window.

Unit

Specifies the units that define the size of the scanned image.

Unit Settings Dialog

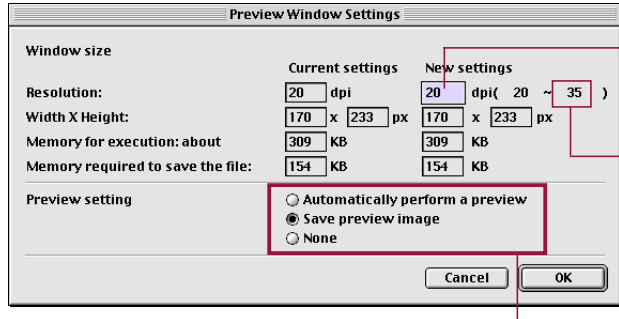


The units displayed in this section of the control panel will change.

Preview Window

You can size the preview window and set its resolution. Enter a large value for a large preview window size. You can also use this feature to set the auto preview and preview cache options.

Preview Window Settings Dialog



Allows you to enter values and change settings for the preview window options.

The maximum values are determined by the type of monitor you are using.

Click the appropriate radio button for the function you want to switch on (Automatically perform a preview, Save preview image and None). Only one button can be selected.

Caution

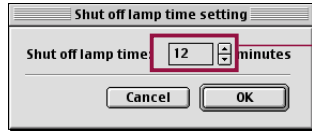
- Changing the preview window size will cause the image previously displayed in the preview window to disappear.

Hint

- If the "Save preview image" option is selected, the last preview image will appear in the preview window when Plug-in Module CS-U is launched again after quitting once. This reduces the steps required to rescan the same image repeatedly.

Shut off lamp time

This option turns off the scanner lamp, which is otherwise continually on while the power is on, to save power if it remains idle for a specified length of time. It can be set to any interval of 4 minutes between 4 and 56 minutes (the actual shut off time may vary slightly from the specified interval). This setting is automatically set to 12 minutes when Plug-in Module CS-U is first installed.



Click the up or down arrow in the spinbox to increase or decrease the number setting or enter a number directly into the entry box

Reset Default Settings

Returns the preference settings and all other settings to the factory default settings. The tables list the major default settings.

Scan Mode	24bit Color
Magnification	100%
Unit	Pixels
Basic Resolution(Platen)	72 dpi
Basic Resolution(Film)	600 dpi
Control Panel Position	Center
Image	Recommended
Unsharp Mask	On
Descreen	Off
Shut of Lamp Time	12minutes
Film Type	Color Negative

Close Plug-in After Scan

This setting determines whether or not Plug-in Module CS-U closes automatically after completion of the scanning job. After you install Plug-in Module CS-U, this setting is set to off. To turn this feature on, open the [Preferences] menu and select [Close plug-in after scan].

Platen/Film

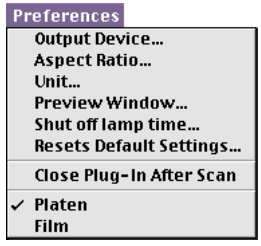
When a film adapter unit (FAU-S12/S13) is attached to the scanner, the [Film] option in the pull-down menu can be selected. Select either [Platen] or [Film] to make the respective scanning method effective, which is indicated by a check mark in the pull-down menu.

Caution

- When switching between the [Platen] and [Film] options, the scanner has to adjust the lamp output, which may require a few moments to take effect.

Operating Procedures

1 Open the [Preferences] menu in the control panel.



2 Select the desired option from the pull-down menu.

- Selecting any one of the Output Device, Aspect Ratio, Unit or Preview Window options displays the respective dialog. Choose the desired value in the dialog and select [OK] to change the setting.
- A confirmation dialog will display if Reset Default Settings is selected. The settings will be reset if [OK] is selected in that dialog.
- You can select either [Platen] or [Film]. The selected one is checked.

Scanning

Step 2 presents the procedures for conducting the final scan, saving the scanned image in a file and editing image files. Follow the procedures below to perform the final scan.

Setting the Scan Area → *p. 30*
Zooming → *p. 31*
▼
Scanning → *p. 33*
▼
Saving Scanned Images → *p. 34*
Scanning Film → *p. 35*

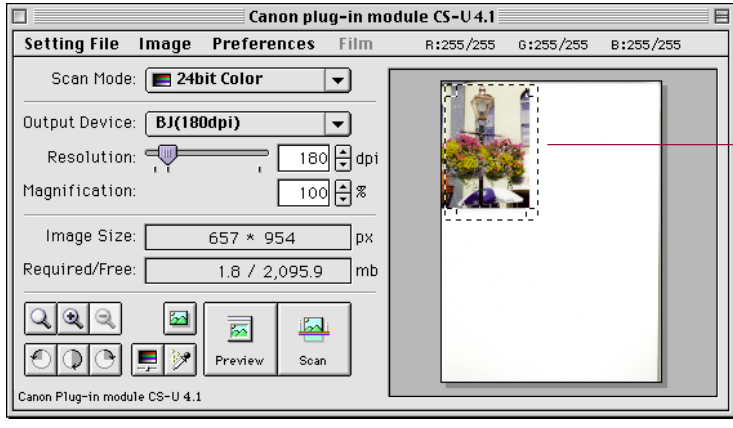
Setting the Scan Area

Using the image in the preview window, you can define the actual area to be scanned.

Operating Procedures

1. **Position the pointer in the preview window.**
   The [+] symbol marks the current position of the pointer.

2. **Click and drag the mouse in the direction you want to define on the image as a frame.**
   The selected area is enclosed in a dotted frame. The area enclosed in this dotted frame is the area that will actually be scanned.



- You may drag the frame in any direction.
- Clicking the mouse button outside the selection frame causes the selected area to be deselected.
- Moving the mouse cursor within the selection frame changes it to an omni-directional arrow [✣]. Dragging the cursor in this state will cause the selection frame to move without changing its shape.
- Placing the mouse cursor over the dotted line of the selection frame causes the cursor to change into one of four shapes [↕] [↔] [⤡] [⤢]. Dragging the selection frame with the mouse cursor changes its shape.
- Double-clicking the mouse button anywhere in the preview window selects the entire image.

Hint

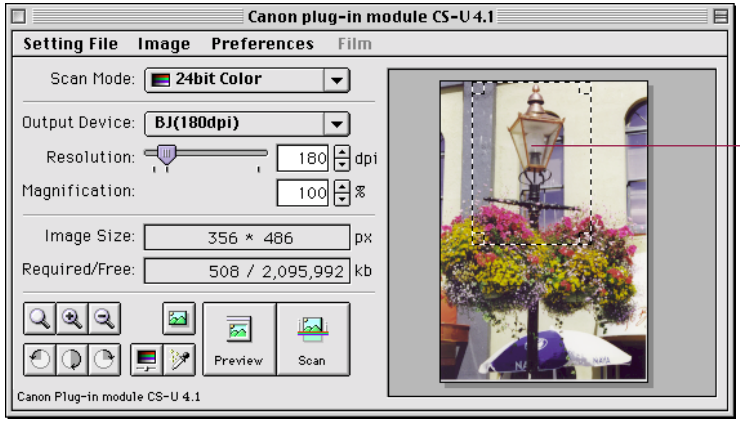
- To specify small areas with precision, it is convenient to expand the preview display with the Zoom In button. See *Zooming* ***(P. 31)***.

Zooming

You can specify a selected area of the image for enlargement with the zoom features. You can use the zoom function to select an area with high precision, or to select small areas for scanning.

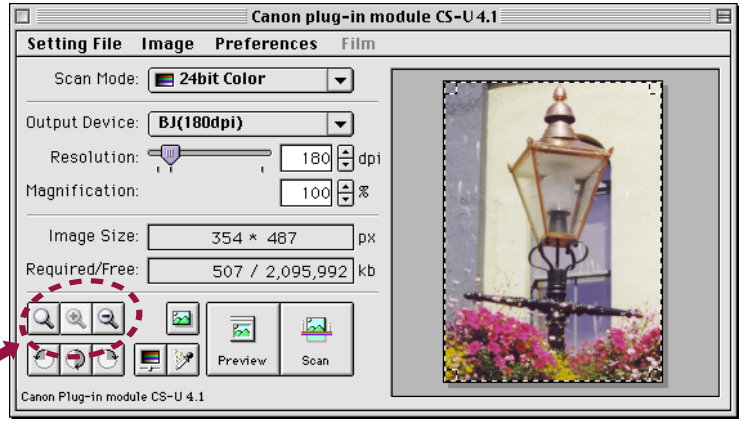
Procedures to Zoom In

1 Select the area you want to enlarge with the zoom function.
See *Setting the Scan Area* ***(p. 30)***.



2 Click on the Zoom In button .

The selected area will be displayed in expanded form.
If you want to enlarge the image again, reduce the size of the area selected with the frame and click the Zoom In button again.



3 Click the Zoom Out button to restore the view prior to zooming.

Click the Zoom Reset Button to restore the size just after previewing.

Hint

- The image cannot be zoomed unless an area is selected.
- The selection can be zoomed up to six times consecutively. If the selected area is too small, the Zoom In button will be disabled and the selection cannot be zoomed.

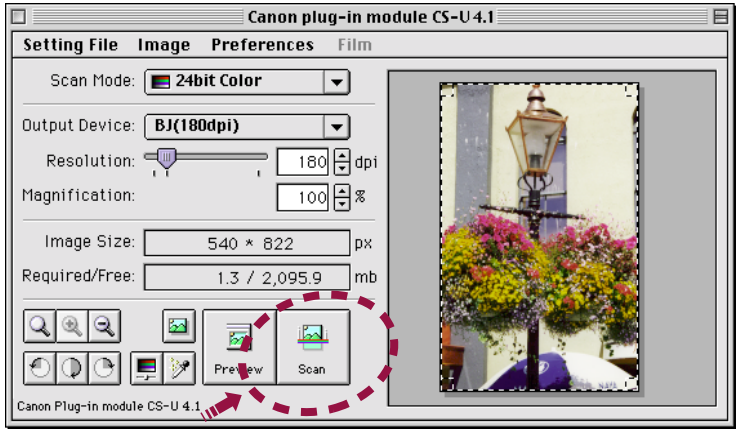
Scanning

Once you have set the magnification and scan mode, you may proceed with the scan. Once the scan is complete, close Plug-in Module CS-U. The scanned image will appear in the application software, such as CanoScan Toolbox or Adobe Photoshop LE.

To Initiate the Scan

1. Specify the Scan Area.
   See *Setting the Scan Area* ***(p. 30)***.

2. Click on the [Scan] button.



- The scan will start.

3. Click ☐ (close box) to guit the Plug-in Module CS-U.
   - When you select [close Plug-in After Scan], the Plug-in Module CS-U quits antomatically.

Hint

- The scan button cannot be clicked if the scan area is set too small (less than 64x64 pixels) or not specified.
- The scan cannot be performed if the required memory is larger than the free disk space.

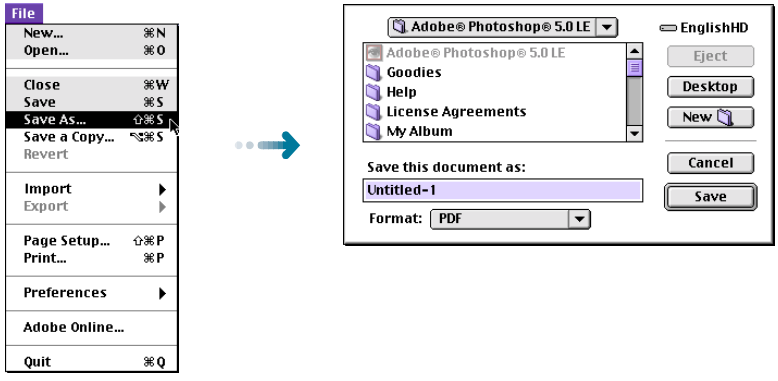
Saving Scanned Images

Follow this procedure to save a scanned image with the parent software application. The example below shows how to save a scanned image with Adobe Photoshop LE. *See the* Adobe Photoshop LE *User's Guide*.

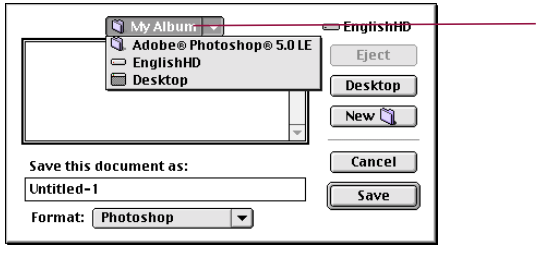
Operating Procedures

After an image is scanned, the image is displayed as "Untitled." When you save the image you can give the file a name and select the folder where it is to be stored.

1. Open the [File] menu and select [Save As...]. The Save dialog will open.

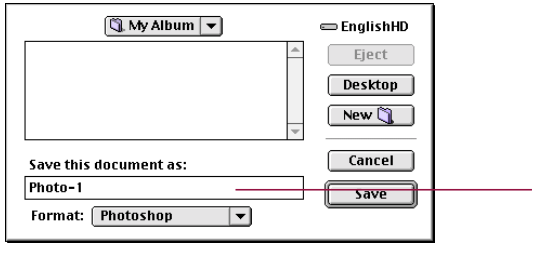


2. Select the folder you want to use for the file.



To select a folder, click the arrow and select the name of the folder in which you want to save the file.

3. Enter a name for the file and click the [Save] button.



Enter a file name here.

Scanning Film

Use the following procedures to scan films when the Film Adapter Unit FAU-S12/ FAU-S13 option is attached.

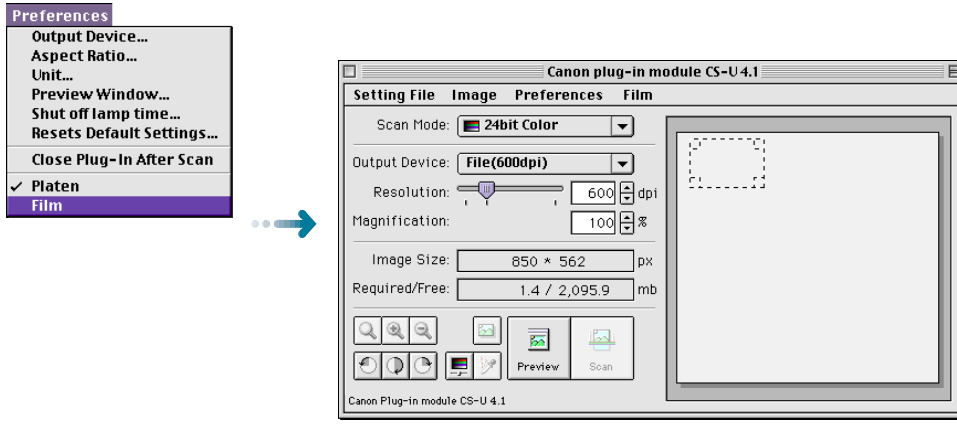
Caution

- Please see the Film Adapter Unit documentation for installation and film placement instructions.

Operating Procedures

1. Insert the film into the film guide and place the assembly on the scanner's document glass (platen). Close the film adapter unit.

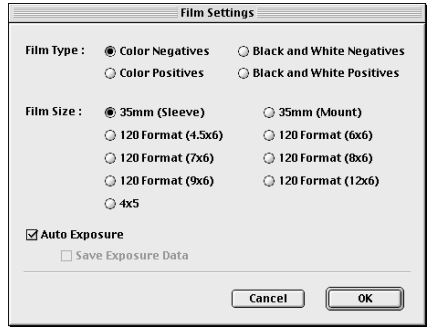
2. Open the [Preferences] menu and select [Film].
   - The shape of the preview area will change to a square and you will be able to select the [Film Settings] option from the [Film] menu.



3. Open the [Film] menu and select [Film Settings].

4 Select the appropriate film type and size.

- Click beside the positive or negative film option and one of the 35 mm, 120 format and 4x5 inch sizes as appropriate. Also set [Auto Exposure] option on or off.



Auto Exposure

This function is available when [Film] is selected. When On, this function automatically sets the exposure data (light intensity and compensation for each RGB channel) to match the brightness of the film and produce the best scanned image. The default setting for this function is On. Set it to Off when you wish to perform the exposure compensation with an application program after the scan or if you wish to achieve an under-exposed effect.

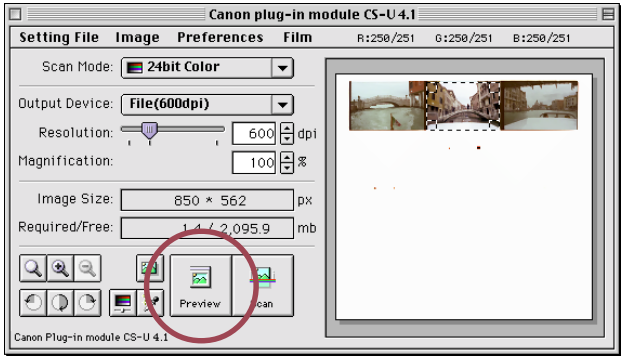
Save Exposure Data

This function is available when [Film] is selected and [Auto Exposure] is set to On. If a check mark is placed beside this option, you can scan a new film using the exposure data from a prior film. If, for example, a film is shot under the same lighting conditions and settings as another, several frames can be scanned with the same exposure data, making it possible to achieve finely matched color tones.

Caution

- Please set the area so that it fits within the boundaries of the selected film size when [Auto Exposure] is set to On. If it extends beyond the edges of the film or is too small, the auto exposure function will not operate correctly.
- At low temperatures, the preview scan may take some time to start because the fluorescent lamp inside the scanner is not sufficiently warmed. If a preview image is too bright or dark in a low-temperature environment, please perform a second preview scan.

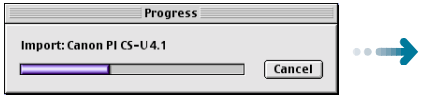
5 Preview the film and select the area you want to scan.



6 Set the scan mode, resolution, magnification and tone adjustment settings as required.

With CanoScan D2400U, [Remove Dust and Scratches] function is available.*(p. 38)*

7 Click on the [Scan] button.



Remove Dust and Scratches (CanoScan D2400U only)

This function is available with CanoScan D2400U and FAU-S13 when [Film] is selected in the [Preferences] menu, and the film type is set to [Color Positives] or [Color Negatives]. The FARE (Film Automatic Retouching and Enhancement] function automatically produces a scanned image with the areas under small bits of dirt or scratches removed. The available settings are [None], [Soft], [Standard] and [Hard].

Soft: Compensates for high-contrast dirt and scratches. At this setting, it may not be possible to restore areas under large flecks of dirt or scratches.

Standard: This setting is recommended for most purposes.

Hard: Compensates for low-contrast dirt and scratches. Although its may restore areas under large flecks of dirt or scratches, it may leave artifacts after processing.

Caution

- This function cannot be used with black and white film. It may also fail to have any effect on KODACHROME film.
- Areas under dirt and scratches may not be removed if the selected scan area is too small.
- There are occasions when areas under dirt or scratches on the top or bottom edges cannot be removed.
- If the edge of the film guide is included in the scan area, the areas under dirt or scratches at the boundaries of the scan area may not be removed.
- The Remove Dust and Scratches function will not work at resolutions above 2400 dpi. Please reset the output resolution at, or within, 25 and 2400 dpi. In addition, lower the magnification so that the scanning resolution remains at 2400 dpi or less. If, for example, the output resolution is set to 1200 dpi and the magnification to 400%, the resulting scanning resolution is 4800 dpi, or four times the output resolution. (1200 dpi x 400% = 4800 dpi)

Operating Procedures

1. Open the [Image] menu and select [Hard], [Standard] or [Soft] from the [Remove Dust and Scratches] submenu.

Adjusting Scanned Images

Scanned images may be corrected for brightness and color tone or edited in a variety of ways.
The potential adjustments vary with the scan mode utilized in the preview.
Adjustments to the scanned image may be made after the image is previewed.

8-bit/14/16bit Grayscale and 24-bit/42/48bit Color:

- Tone Adjustment → *p. 40*
- Histogram Settings → *p. 41*
- Tone Curve Settings → *p. 44*
- Brightness and Contrast Settings → *p. 47*
- Adjusting Color Balance → *p. 49*
- Gamma Value Settings → *p. 50*

Black & White:

- Adjusting Threshold Value → *p. 52*

24-bit Color:

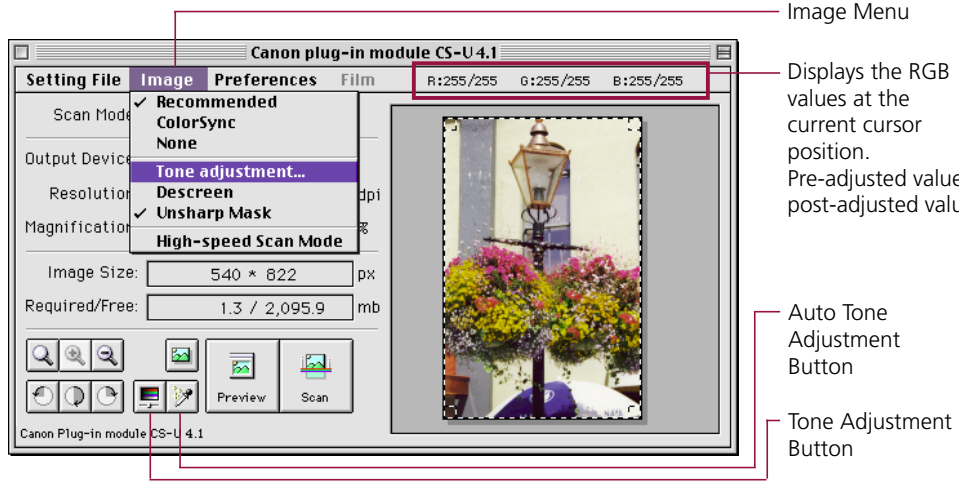
- Auto Tone Correction (ColorSync™) → *p. 53*
- Unsharp Mask → *p. 54*
- Descreen → *p. 55*
- High-speed Scan Mode → *p. 56*
- Saving/Recalling Settings → *p. 57*
- Scanning Techniques → *p. 59*

Tone Adjustment

Use Tone Adjustment to enhance the brightness or color of the image in the preview area. Open the [Image] menu and select [Tone Adjustment], or click the [Tone Adjustment] button, to open the Tone Adjustment dialog so you can enhance the preview image.
You can also click the [Auto Tone Adjustment] button so the histogram highlights and shadows are adjusted for you automatically to the optimum settings.

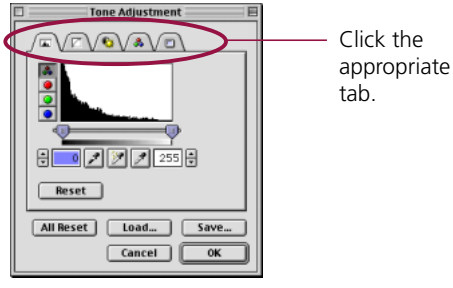
Caution

- Adjustments cannot be made when the ColorSync option is selected *(p. 49)*.

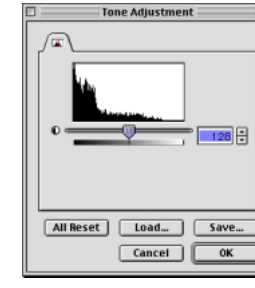


Tone Adjustment Dialog

The Tone Adjustment dialog contains tabs for the following features: histogram, tone curve, brightness/contrast, color balance, and gamma. If black and white has been selected as the scan mode, the threshold feature also becomes available on the histogram tab.
The settings selected in the Tone Adjustment dialog are also reflected in the next preview image. To scan a new item, ensure that you click the [All Reset] button to restore all of the settings to their default values.



Here is the Tone Adjustment dialog with all the tabs you will see when color or grayscale has been selected as the scan mode.



Here is the Tone Adjustment dialog you will see when black and white is selected as the scan mode. Only one tab is available.

Histogram Settings

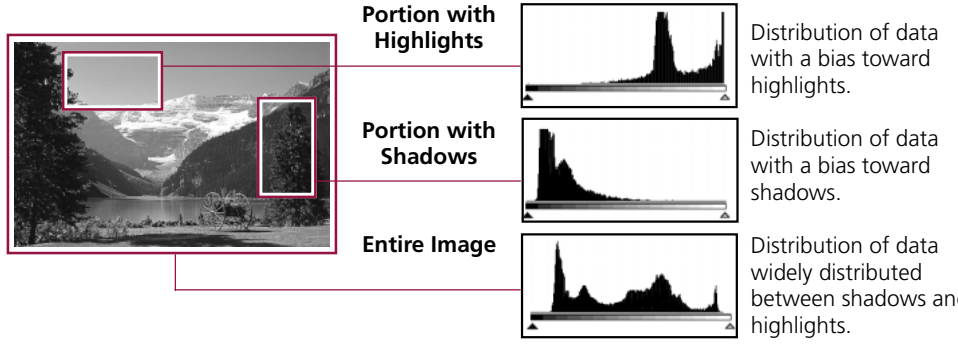
The data comprising an image contains a variety of brightness settings ranging from shadows to highlights. These settings are represented in Plug-in Module CS-U by values ranging between 0 and 255. The difference in these values determines the image's contrast. To show how much of the image data falls into each brightness setting, Plug-in Module CS-U contains a histogram feature that shows this data distribution clearly. With the histogram you can adjust the level of shadows and highlights to achieve beautiful tones with the best possible contrast.

Hint

- You can enhance images with the histogram options only when the image has been previewed in the color or grayscale scan modes.
- You cannot enhance the image with the histogram when ColorSync™ is selected.

How to Interpret Histograms

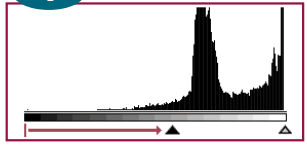
You can select the entire image or specify an area for which a histogram will be generated. The height of the peaks of the histogram is directly related to the volume of data with the corresponding value.


Portion with Highlights
Distribution of data with a bias toward highlights.
Portion with Shadows
Distribution of data with a bias toward shadows.
Entire Image
Distribution of data widely distributed between shadows and highlights.

How to Adjust Histograms

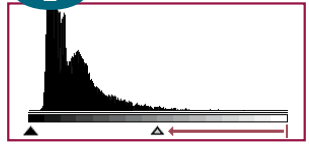
To change the contrast in an image, the distribution of data between shadows and highlights can be adjusted by dragging the shadow and highlight marks at the bottom of the histogram. All of the data lying to the outside (left) of the shadow mark is changed to a zero value and all of the data lying to the outside (right) of the highlight mark is changed to a 255 value. The examples below show adjustments to improve the contrast. Use the [Auto] setting to adjust the histogram for most jobs ***(p. 41)***. The graphs below show images adjusted with the Auto setting.

IMAGE 1 **Image with a bias toward highlights**



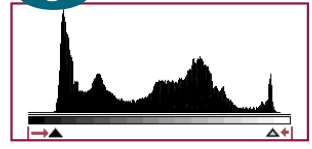
Move the shadow mark toward the highlight end.

IMAGE 2 **Image with a bias toward shadow**



Move the highlight mark toward the shadow end.

IMAGE 3 **Image with well distributed data**



Move both the shadow and highlight marks inward.

To Adjust a Histogram

1. Specify the area of the image (the entire area to be scanned) for which a histogram will be generated. See *Setting the Scan Area* ***(p. 30)***.

   The histogram will not display correctly if an extremely small area is selected. To select small areas, first expand the display with the Zoom In button. See *Zooming* ***(p. 31)***.

2. Click the histogram tab in the Tone Adjustment dialog to display the histogram options.

3. Click the [Auto] button.

   Although you can freely move the shadow mark and highlight mark to another position, the image can be adjusted easily for optimum effect with the Auto button.

The histogram settings can be adjusted for all channels (Master) or for individual channels (R, G, B). The selectors are displayed to the left of the histogram graph (Master, R, G, B). The Master selection is unavailable if Grayscale has been selected as the scan mode.

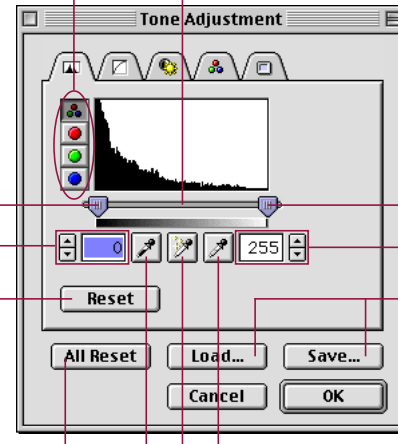
Shadow Mark
All of the data to the left of this mark is set to the shadow (0) value. Drag the mark to the right or left.

Displays the current level at the shadow mark. Click the up or down arrows in the spinbox to increase or decrease the setting or enter a number directly into the entry box (0~245).

To restore the histogram settings, click this [Reset] button.

To restore all settings to their defaults, click the [All Reset] button.

Clicking directly on this bar causes the shadow or highlight mark, whichever is closest, to advance to that position.



Highlight Mark
All of the data to the right of this mark is set to the highlight (255) value. Drag the mark to the right or left.

Displays the current level at the highlight mark. Click the up or down arrows in the spinbox to increase or decrease the setting or enter a number directly into the entry box (10~255).

The Tone Adjustment settings can be saved in a file and reloaded for later use.

Black Eyedropper Button
Click the Black Eyedropper and click the position in the preview image you want to set to black (0).

Auto Button
Automatically sets the highlight and shadow settings for optimum effects.

White Eyedropper Button
Click the White Eyedropper and click the position in the preview image you want to set to white (255).

4 Click on the [OK] button.

The preview image will change according to the values specified with the histogram.

Hint

- The histogram dialog can also be displayed by selecting [Tone Adjustment] from the [Image] menu.

Tone Curve Settings

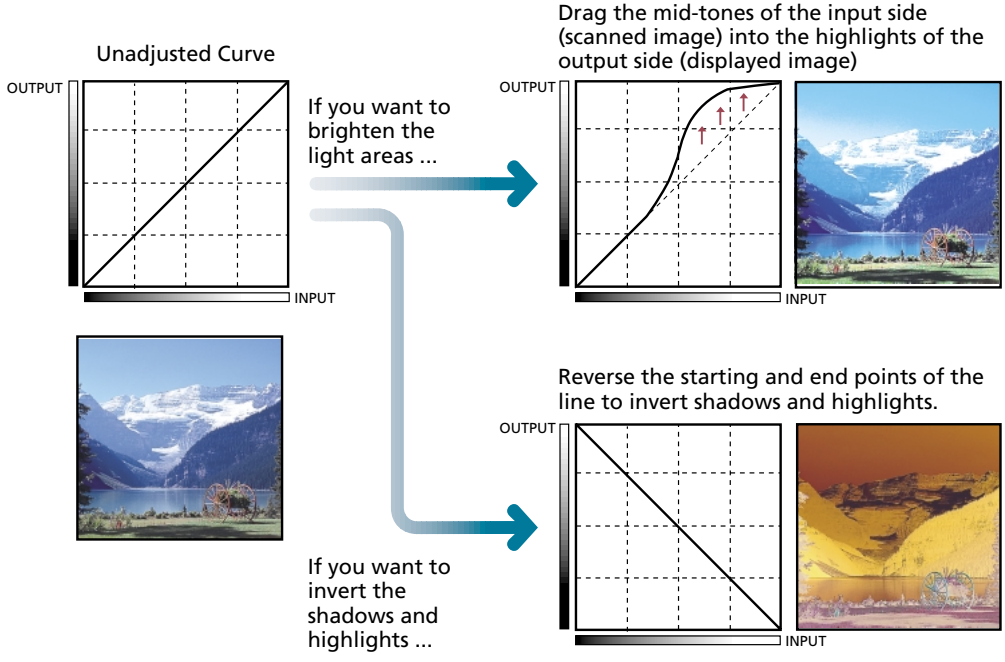
You can edit the tone curve directly by changing the shape of the line on the graph. When you change the setting by manipulating the curve, you can perform fine adjustments in the brightness of only the shadows, only the highlights, or both the shadows and highlights.

Hint

- You cannot use this feature with the black and white or color scan modes when ColorSync is selected.

Manipulating the Graph

The following examples show you how to manipulate the graph to change the settings. When you test these settings yourself, you can see the changes immediately reflected in the preview window or the browser to achieve many interesting effects.


Unadjusted Curve
OUTPUT
INPUT
If you want to brighten the light areas ...
Drag the mid-tones of the input side (scanned image) into the highlights of the output side (displayed image)
OUTPUT
INPUT
If you want to invert the shadows and highlights ...
Reverse the starting and end points of the line to invert shadows and highlights.
OUTPUT
INPUT

(If the image is in color, the colors are switched to their complementary colors.)

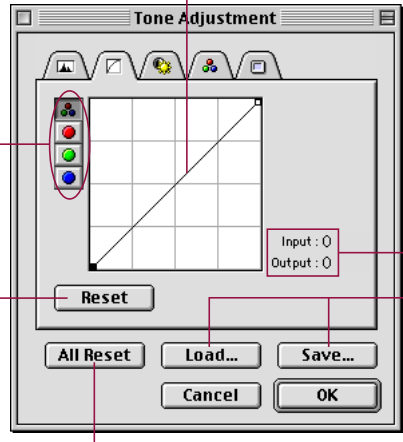
To Edit the Tone Curve

1. In the Tone Adjustment dialog box, click the tone curve tab.

2. Change the tone curve in any direction to adjust its shape.

You can adjust the setting for each channel: R (red), G (green), B (blue) or M (master). You can adjust each channels independently. (You can adjust RGB only for a color image.)

To create a control point on the line, just click anywhere in the graph. After a control point is displayed in the line you can click to move it in any direction. As you move it to another location, the value changes. You can set several control points on the tone curve.



Shows the input and output level at the point under the pointer (control point) in the graph, expressed as a value from 0 to 255 where 0 is the darkest and 255 the lightest. If the output level is larger than the input level, this results in a lighter image.

To restore the tone curve default settings, click this button.

To restore all the default settings, click this button.

The Tone Adjustment settings can be saved in a file and reloaded for later use.

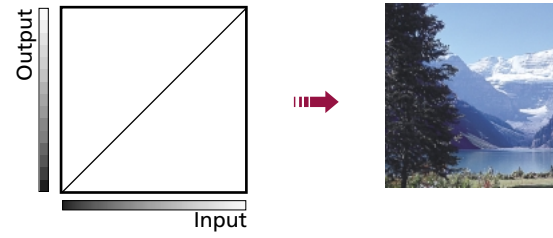
3. Click the OK button.

The image in the preview window changes to reflect the new settings.

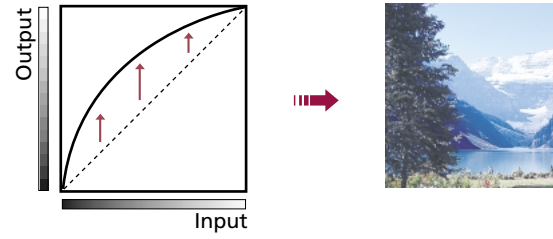
The Relationship Between the Tone Curve and Image Brightness

The Gamma values fall with a range of 0.01 to 10.00. A value of 1 appears as a straight line in the graph, and if the value is any value other than one, the line on the graph will appear curved. The relationship between the shape of the curve and image brightness is explained below.

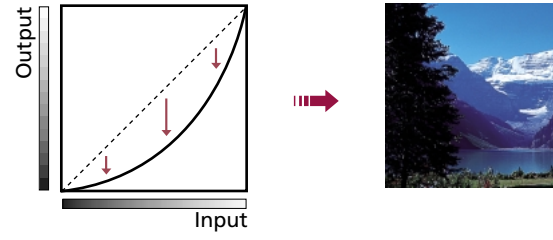
Gamma Value = 1
Input and output and are equal and the curve appears as a straight line, and the input image is displayed on the screen without adjustment.



Gamma Value > 1
The data bends upward over the range of input values from shadows to highlights, making the adjusted image brighter in the display.



Gamma Value < 1
The data bends downward over the range of input values from shadows to highlights, making the adjusted image darker in the display.



CAUTION

- The tone curve cannot be adjusted manually in one of the color scan modes when ColorSync is selected because the color balance is adjusted automatically.
- The tone curve cannot be adjusted for a black and white image because mid-tones are shown as either black or white. To adjust the brightness of a black and white image, use the *threshold setting* ***(p. 48)***.

Brightness and Contrast Settings

You can adjust the image with two slide bars, one for contrast and one for brightness. Use this method to adjust an image before scanning if it is slightly out of focus or too dark.

Hint

- You cannot use this feature with the black and white or color scan modes when ColorSync is selected.

Contrast

Contrast is the difference between the lightest light and the darkest dark in the image. A high contrast setting creates a great difference between light and dark shades, and there is a very sharp distinction between light and dark areas of the image. A low contrast setting creates a small difference between light and dark shades, and the distinction between light and dark areas of the image are not as obvious.

Contrast = 128 (Normal) **Contrast = 170** **Contrast = 100**

If the image appears slightly out of focus, increase the contrast setting to sharpen the image. If the contrast setting is too high, shadows will blacken and the highlights will wash out.

Brightness

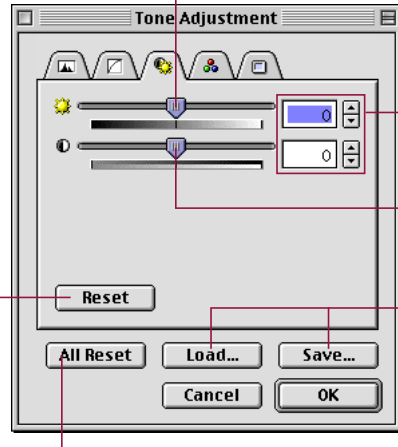
Brightness is the overall lightness or darkness of an image without changing the contrast. Adjust the brightness setting to change the overall lightness or darkness of the entire image. If the brightness setting is too high, the highlights will wash out, and if too low, the shadows will blacken.

Brightness = 128 (Normal) **Brightness = 190** **Brightness = 80**

To Adjust the Brightness and Contrast

1. In the Tone Adjustment dialog click the brightness/contrast tab.

2. Adjust the brightness/contrast settings by dragging the slidebars, changing the value with the spinbox buttons, or entering the value directly into the entry box.



Drag the slidebar left or right to adjust the brightness setting.

You can also click the up or down arrow in the spinbox to raise or lower its value or enter a number directly into the entry box (-127~+127).

Drag the slidebar left or right to adjust the Contrast setting.

The Tone Adjustment settings can be saved in a file and reloaded for later use.

To restore all the default settings, click this button.

To restore the brightness/contrast default settings, click this button.

3. Click the [OK] button.

The settings will be reflected in the image currently displayed in the preview window.

Adjusting the Color Balance

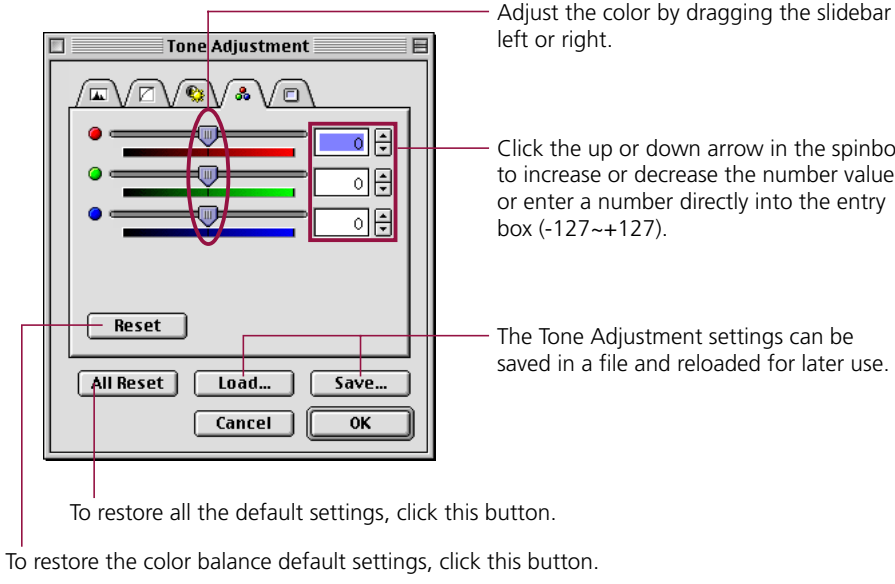
You can enhance color matching by adjusting the color balance of one or all of the three primary colors: red, green and blue (RGB). Use this feature to adjust the color balance when you see an over-abundance of a color in a scanned image.

Hint

- You cannot use this feature with the black and white or grayscale scan modes, or with the color scan modes when ColorSync is selected.
- There may be wide differences in the contrast and hue of the display image and printout, depending on the monitor and printer settings. You may have to adjust the settings and execute some test prints to attain the best match between what you see in the image on the display and in the printout.

Operating Procedure

1. Click the color balance tab in the Tone Adjustment dialog.
2. Adjust the color balance for each or all of the primary colors: red, green and blue (RGB).


Adjust the color by dragging the slidebar left or right.
Click the up or down arrow in the spinbox to increase or decrease the number value or enter a number directly into the entry box (-127~+127).
The Tone Adjustment settings can be saved in a file and reloaded for later use.
To restore all the default settings, click this button.
To restore the color balance default settings, click this button.
Tone Adjustment
0
0
0
Reset
All Reset
Load...
Save...
Cancel
OK

3. Click the [OK] button.

Gamma Value Settings

By adjusting the gamma value, you can more closely match brightness of the displayed image to the printed image. Adjust this value if what you see on the screen is very different from your printout.

Hint

- You cannot use this feature with the black and white scan mode, or with the color scan modes when ColorSync is selected.

Matching the Gamma Value to the Display Characteristics

Not all screen displays reproduce color tones in exactly the same way, and this reproduction method is expressed as a gamma value from 1.4 to 2.2 and normally reproduces a slightly dark image.
In order to avoid this and reproduce an image that is faithful to the original, the gamma value must be adjusted in Plug-in Module CS-U. Plug-in Module CS-U can adjust the pre-set screen gamma value of 1.8, but if the screen has a gamma value other than 1.8 then the gamma value for that screen must be set.

Gamma value

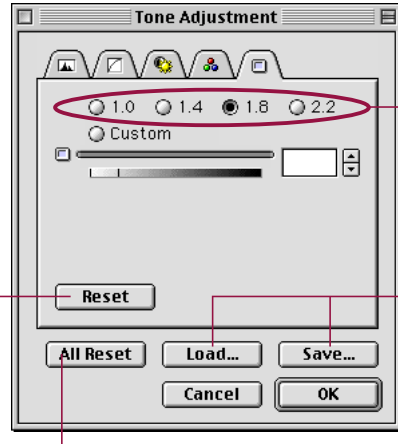
Plug-in Module CS-U and the screen display have different gamma values. During a scanning job Plug-in Module CS-U receives the image read from the scanner as input and sends it to the parent application as output. The gamma value in this interval where Plug-in Module CS-U converts input to output is the Plug-in Module CS-U gamma value.
On the other hand, the data received from Plug-in Module CS-U as input is sent to the screen display as output. The gamma value in this interval where the image input from Plug-in Module CS-U is converted to output for the screen display is the screen display gamma value.
Setting the screen display gamma value causes the scanner gamma value to be calibrated automatically as the inverse value. For example, if the screen display gamma value is set for 1.8, then the scanner gamma value is calibrated for 0.56 (the inverse of 1.8).

Hint

- Please read the documents shipped with your display or contact the manufacturer's customer service department to obtain the correct gamma value for your particular display model.
- If you intend to adjust the color tone with ColorSync™, change the settings in the ColorSync™ control panel (found within the Control Panels folder) and do not manually change the gamma value settings as described in the following pages.

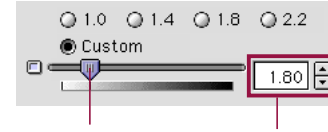
To Change the Gamma Value Settings

1. Click the gamma tab in the Tone Adjustment dialog.
2. Click a pre-set value or the custom option.



Click the appropriate radio button to select a numerical setting.

After you click the [Custom] button, you can drag the slidebar to adjust the setting, or you can enter a value directly into the entry box.



Drag left or right to change the setting.

Click the up or down arrow in the spinbox to increase or decrease the value or enter a number directly into the entry box (0.1~10.0).

The Tone Adjustment settings can be saved in a file and reloaded for later use.

To restore all the default settings, click this button.

To restore the gamma default settings, click this button.

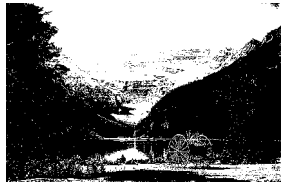
3. Click the [OK] button.

The changes are reflected in the image currently displayed in the preview window.

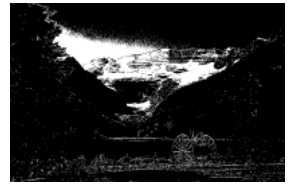
Adjusting the Threshold Value

When the scan mode is set to black and white, the image brightness can be adjusted. The threshold value setting determines whether a halftone will be expressed as a black or a white data point. The possible threshold values range between 0 and 255. Below a given threshold value, all data is converted to black. Likewise, all data with a value above the threshold is converted to white. Accordingly, higher threshold values produce darker images while lower threshold values result in brighter images.

Threshold Value = 128 (Standard)



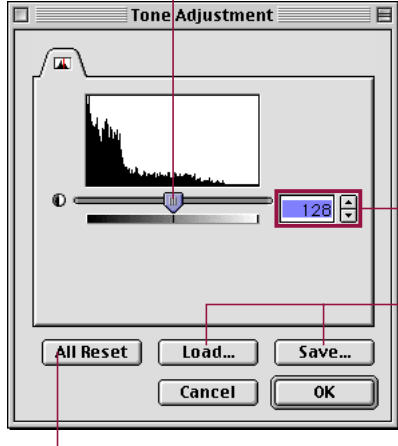
Threshold Value = 180



Threshold Value = 70

To Set the Threshold Value

1 When the scan mode is set to black and white, click the [Tone Adjustment] button or pull down the Image menu and select [Tone Adjustment].



Drag the slidebar left or right to adjust the threshold setting.

Click the up or down arrow to increase or decrease the entry in the text box, or enter the value (0~255) directly from the keyboard.

After adjusting the threshold value, you can save the setting to a file under a file name and load the file again whenever you want to use the setting.

To restore the threshold setting to its default value, click this button.

2 Click the [OK] button.

The preview image will change to reflect the new settings.

Auto Tone Correction

When the selected scan mode is Color, you have three options for adjusting the color: Recommended, ColorSync or None. The default setting is [Recommended].

Recommended:

Reproduces the colors of the scanned item vividly on a computer display. You are advised to use this mode under normal circumstances.

ColorSync:

Automatically matches the color settings of the scanner, computer display and color printer. Select this mode when you wish to set the appropriate color profile to view the colors of the scanned image on the computer display as closely matched to the original image as possible.

None:

Scans without color correction. Select this mode when you wish to adjust the colors yourself with the color correction features of Plug-in Module CS-U or another application program after scanning. This mode is most appropriate for advanced users.

Caution

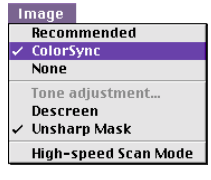
- This function is available only when the scan mode is set to one of the color modes; not to the grayscale or black and white modes.
- The Tone Adjustment menu item, Tone Adjustment button and Auto Tone Adjustment button are disabled when the ColorSync option is selected.
- The previous settings are in effect when Plug-in Module CS-U is started from an application program that does not display the Plug-in Module CS-U control panel.

Hint

- ColorSync™ responds differently to each computer according to the unique conditions affecting it (type of display used, etc.), which may cause differences even between computers of the same make and system version. The tone characteristics of an image scanned with ColorSync™ on one computer, therefore, may change when processed on another computer.

To Set the Auto Tone Correction

1. Open the [Image] menu and select [Recommended], [ColorSync] or [None].



A check mark will appear beside the selected option, which will take effect.

Unsharp Mask

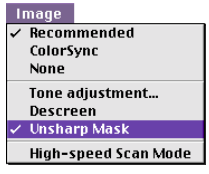
The Unsharp Mask function enhances the outlines of an image. When set to On, this function makes the image outlines appear sharper without changing the brightness, contrast or color balance, giving it a natural look. It is particularly useful for scanning images that are slightly out of focus.
The function is on when a check mark appears beside it and off when there is none. The default value is On.

Caution

- This setting is not available for the black and white scanning mode.
- If Plug-in Module CS-U is started within an application that hides the Plug-in Module CS-U control panel, the previous setting will be maintained.

Operating Procedures

1. Open the [Image] menu and select [Unsharp Mask].



A check mark will appear beside the Unsharp Mask option in the menu when this function is set to On. To set it to Off, reselect it. The check mark will disappear.

Hint

- Disable the Unsharp Mask function if the moiré effect is still too strong even when the Descreen option is on.
- When the Unsharp Mask is on, it may take longer to scan.

Descreen

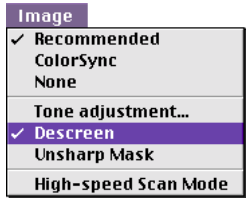
Select this option if you want Plug-in Module CS-U to conduct moiré reduction to improve the overall image quality. Moiré are dot patterns that interfere with processing images for professional use and are usually caused by poor dithering resulting from scanning images from newspapers, books, magazines, etc.

Caution

- When you select [Film] in the [Preferences] menu, the Descreen function is not available.
- The Descreen function cannot be switched on for scanning resolutions higher than 601 dpi.
- The previous setting is enabled for the Descreen function when Plug-in Module CS-U is opened by a software application operating in the windowless mode.

Operating Procedures

1. Open the [Image] menu and select [Descreen].



A check mark will appear beside the Descreen option in the menu when this function is set to On. To set it to Off, reselect it. The check mark will disappear.

Hint

- When the Descreen is on, it may take longer to scan.

High-speed Scan Mode

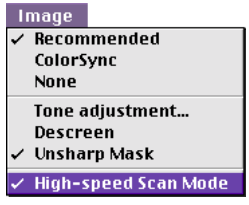
This function is available when the image source is set to [Platen]. When a check mark is placed beside this option, scanning can be accomplished faster because the lamp output data (auto color adjustment data) from the first pass is used for subsequent passes. The default setting is Off for this function.

Caution

- When you select [Film] from the [Preferences] menu, the High-speed Scan Mode is not available.

Operating Procedures

1. Select [High-speed Scan Mode] from the [Image] menu.



Caution

- It may take some time to acquire the lamp output data on the first scan after the high speed scanning mode is selected. Similarly, the first scan after Plug-in Module CS-U is started make take some time even when the high speed scanning mode is selected.

Saving/Recalling Settings

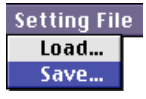
The scan mode, resolution and preference settings can be saved with a preview image to a settings file and recalled for future processing. The user may freely assign a name to the settings file. It is convenient to save frequently used settings in a file.

Hint

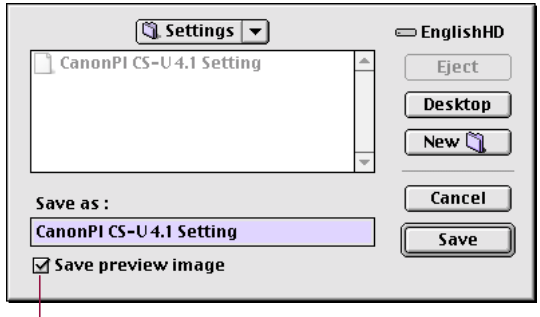
- In addition to settings, the settings file may also be used to store preview images. It is useful to save the preview image with the settings to quickly grasp to which image the settings apply.

To Save Settings in a Settings File

1. Open the [Setting File] menu and select [Save].



2. Specify the folder where you want to store the file and enter a name for it.



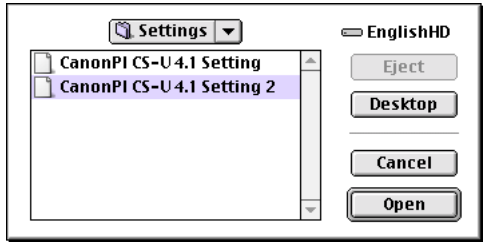
Insert a check mark by clicking this box to have a copy of the preview image saved with the settings file.

3. Click the [Save] button.

To Recall a Settings File

1. Open the [Setting File] menu and select [Load].

2. Select the folder where the file is stored and click the name of the file you want to load.



3. Click the [Open] button.

The file you selected opens and the settings stored in the file are enabled for the Tone Adjustment settings.

Scanning Techniques

Matching Scan Resolution to Purpose

Plug-in Module CS-U provides many choices of resolution. The resolution you choose should depend upon your output device, the intended purpose of the image, the type of image and your scanner.

It is generally recommended that you scan at a higher resolution than required for output. This ensures that you obtain the best quality image, which can then be reduced with an image editing program to suit specific purposes.

Different types of images require different scan settings. However, increases in scan resolution have a diminishing return after a certain point. For example, a text image can be scanned at 600 dpi for output to a 600 dpi laser printer, while a color image should be scanned at 180 dpi to be output to a color bubble jet printer (360 dpi). To output a color or grayscale image to a bubble jet printer, use a resolution equal to half the resolution of the printer. Set the resolution to 180 dpi, for example, for output on a 360 dpi printer.

- Scan in Black and White mode if you are scanning line art or other items that are Black and White with no shades of gray.
- Scan in Black and White mode if you are scanning a text image for conversion to editable text.
- Scan in 8bit Grayscale mode if you are scanning continuous-tone Black and White photographs, charcoal drawings or originals with shades of gray.
- Scan in 24bit Color mode if you are scanning full-color images, such as photographs or illustrations.
- If you are using an OCR (optical character reader) program in Black and White mode, you are recommended to select a resolution higher than 300 dpi.

Appendices

Troubleshooting → *p. 61*

Error Messages → *p. 65*

Glossary → *p. 66*

Index → *p. 71*

Canon Customer Support Help Desk → *p. 73*

Troubleshooting

Please refer to the following information if you encounter a problem using Plug-in Module CS-U. For further details, refer to the Troubleshooting item on the CD-ROM provided with your scanner.

If your problem lies outside the solutions provided below, consult the retail outlet from which you purchased the software or the closest ***Canon Customer Support Help Desk***.

Hint

- Before you call for assistance, read *Quick Start Guide* or *Troubleshooting*.
- When you contact one of the help desks listed, you will be asked what kind of computer is connected with the scanner. Before you call, make sure you have prepared the information required on the system information page in the *Quick Start Guide*.

Problem: **The "Can't use the driver required for a USB device. Search the Internet for a driver?" dialog displays on a system running Mac OS 9 (only applicable to Mac OS 9)**

➤Solution: Scanner software has not been installed. Click the [Cancel] button to close the dialog. Detach the scanner, and install the required software from the CanoScan Setup Utility CD-ROM before reattaching the scanner. ***(→ Quick Start Guide)***

Problem: **Plug-in Module CS-U does not appear as an option on the menus of a plug-in compatible application program**

➤Solution: Plug-in Module CS-U is not correctly installed on your hard disk drive. Reinstall Plug-in Module CS-U. ***(→ Quick Start Guide)***

Problem: **The image will not appear even if the Preview button is clicked on the Plug-in Module CS-U control panel**

➤Solution 1: Make sure the original is set on the document glass correctly

➤Solution 2: The brightness settings for Plug-in Module CS-U may be set too high. Try lowering the brightness settings. For details about brightness setting, see *Brightness and Contrast Settings* ***(→ p. 43)***

➤Solution 3: The threshold setting for Plug-in Module CS-U may be set too high. Try lowering the threshold setting. For details about setting the threshold setting, see *Adjusting Threshold Value* ***(→ p. 48)***

Problem: **Scan button cannot be selected**

- Solution 1: A scan cannot be performed if the scan area is set too small (less than 64 x 64 pixels). Increase the size of the scan area
- Solution 2: A scan cannot be performed unless a scan area is specified. Specify a scan area
- Solution 3: A scan cannot be performed if the required memory is larger than the free memory. Change the resolution *(➜ p. 19)* or scan area *(➜ p. 30)* until the required memory is lower

Problem: **The "Insufficient Memory" error message appears when scanning**

- Solution 1: Select the smallest possible area and rescan
- Solution 2: Lower the resolution and magnification settings for the output device to the lowest possible values *(➜ p. 19)*
- Solution 3: Rescan after closing all the application programs other than the one used to start Plug-in Module CS-U
- Solution 4: Rescan after you have restarted the application program used to start Plug-in Module CS-U
- Solution 5: Quit the application program used to start Plug-in Module CS-U and increase the memory allocated to it. Click the application program icon once. Then open the [File] menu, choose [Get Info], and choose [Memory] from the submenu. Increase the memory in the Preferred Size box to at least 16,000 K.
- Solution 6: Increase the amount of RAM as required

Problem: **The [Image] menu [ColorSync] option cannot be used in Plug-in Module CS-U**

- Solution: ColorSync is not recognized after Mac OS upgraded to Version 9 after Plug-in Module CS-U was installed onto Mac OS 8.6. Reinstall Plug-in Module CS-U *(➜ p. 6)*

Problem: **No free disk space message displays when you start a scan**

➤Solution: Since there is insufficient free space on your hard drive, clear non-essential files to create more space.

Problem: **Scanning is taking a long time**

➤Solution: Resolution is set too high. Lower the resolution to the minimum required settings and rescan.

Problem: **Can't scan with the film adapter unit**

➤Solution: Set the film guide correctly on the document glass (platen). *See the user guide for the film adapter unit*.

Problem: **Colors in the Preview area are strange**

➤Solution 1: The original is faded. Try retouching the colors with an image editing program. (image editing program manual)

➤Solution 2: Color balance and brightness are incorrectly set. Reset them.

➤Solution 3: The fluorescent lamp inside the scanner is not sufficiently warmed. Please wait for a minute or two, then perform a preview scan again.

➤Solution 4: Calibration slot on the film guide is obstructed. Clear any items or dust blocking the calibration slot. *See the user guide for the film adapter unit*.

Problem: **Entire image is whited out (or blackened) when the image type is set to black and white**

➤Solution: The threshold value is set too low (or high). Increase (decrease) the threshold value.

Problem: **Scanning quality is poor**

- Solution 1: Resolution is too low. Raise it and rescan.
- Solution 2: Original is floating off the document glass (platen). Place the original correctly on the document glass.
- Solution 3: Document glass or underside of the document cover is dirty. Clean them.

Problem: **Smudges are appearing on glossy color photo scans**

- Solution: Photos are adhering to the document glass are causing the light to refract, creating the striped patterns. Shift the photo to a different position on the document glass or clean the document glass before rescanning.

Problem: **Coloring of the preview image and the printed image is different**

- Solution 1: Insufficient printer toner (ink). Replenish or replace the toner. (printer manual)
- Solution 2: Color balance or gamma value setting in the printer driver doesn't match the printer. Manually adjust the settings in the printer driver. (printer manual)

Error Messages

Error Message	Cause	Response
Scanner is not connected. Connect the scanner.	• AC adapter and USB cable not connected correctly.	• Use the USB cable to connect the Macintosh to the scanner properly and connect the AC adapter correctly to the scanner.
Scanning unit is locked. Release the lock switch and connect the PC to the scanner again.	• The scanning unit lock not released.	• After releasing the lock, temporarily disconnect the AC adapter or USB cable. Reconnect it and restart Plug-in Module CS-U and click [Preview].
	• The scanning unit is out of order.	• Contact your nearest ***Canon Customer Support Help Desk***.
1) Cannot complete scan command. Insufficient memory (RAM). 2) Memory is insufficient. Increase the memory allocated the application.	• Memory is insufficient for the required volume of the scanned image data.	• Reduce the scan area to the minimum possible scope and lower the resolution and magnification settings for the output device.
		• Close all application programs other than the one used to start Plug-in Module CS-U.
		• Increase the memory allocated to the application program used to start Plug-in Module CS-U. ***(➜ p. 57)***
As image size is large, it will take long to complete scanning. Do you want to continue?	• You attempted to scan an image exceeding 100 MB.	• Click [Cancel] to cancel, or rescan after lowering the scanning resolution or reducing the scanning area.
An error has occurred. Error Code =** Restart the PC.	• Scanner or computer is malfunctioning.	• Restart the computer. If the same error code displays after restarting the computer, contact the nearest ***Canon Customer Support Help Desk***.

Glossary

Auto Tone Correction

A function that uses brightness/contrast and gamma value settings to automatically analyze and adjust images.

Bits/Bit Numbers

Each dot of a 1-bit image is assigned either black or white according to the threshold brightness value, resulting in the image being reproduced in just those two colors. Each dot of an 8-bit grayscale image can be assigned any one of 256 tones of gray, ranging from pure white to black. Each dot of a 24-bit color image can be assigned any one of 16.7 million colors since each of its color channels (red, green and blue) can be expressed in 256 distinct color tones (8 bits).

Black and White

An image mode used to reproduce images in two tones only: black and white. The brightness level at which a dot is determined to be either black or white is called the threshold value, which can be adjusted. See Threshold Value.

Black Eyedropper Tool

Tool used to the select the darkest portion of an image in the preview area. Used with the Histogram function to adjust image brightness. When this tool is clicked on the image, all areas that are darker are set to pure black.

Brightness

The intensity of light in a scanned image. Raising an image's brightness increases its overall brilliance, while decreasing it makes it darker.

Color Balance

The function in that enables you to adjust the blend of colors in a color image. You can adjust the color balance by altering the blend of the red, green and blue color set or the cyan, magenta, yellow and black color set.

Color Channel

Any one of the red, green or blue elements of a color image. Since color images are assigned 8 bits per pixel for each of the red, green and blue channels, each pixel is assigned 24 bits of data. The master channel is the composite of these three channels. In the Histogram and Tone Curve image adjustment functions, each channel can be separately or collectively adjusted.

Color

An image mode that scans an image as red, green and blue (RGB) light and can reproduce each one of these three colors in 256 distinct tones (8 bits). Since 256 x 256 x 256 = approximately 16.7 million, this many color tones are possible in this mode.

ColorSync

A color management system for Macintosh computers. Automatically compensates for color differences between scanners, monitors and printers. ColorSync requires that a color profile file be included for your specific monitor or printer.

Contrast

The difference between light and dark areas of a scanned image. Raising the contrast makes individual components of an image stand out more while lowering it softens the image's overall appearance.

Dot

The basic element used to reproduce images. Images are reproduced as columns and rows of dots. A scanner's resolution is the measure of the number of dots it can read and reproduce per inch (dpi).

DPI

Dots per inch. An expression of monitor and printer resolution. Measured as the number of dots per horizontal inch on monitors and the number of dots that can be printed by a printer in an inch. See also Pixel, Optical Resolution and Resolution.

Gamma Value

A function for adjusting the overall brightness of an image. A gamma value is the mathematical expression of how brightness data is converted from a scanner (the input) to a monitor or printer (the output). With 1 as the base value, a gamma value less than 1 makes an image darker, while a higher value makes it brighter. The brightness handling characteristics of monitors vary between manufacturers and models. A monitor's gamma value explains the degree to which its output (what you see on the screen) varies from the input value.

Grayscale

An image mode that scans only the brightness data of an image and reproduces the image in white, black and 254 shades of gray (256 tones or 8 bits).

Histogram

A graph indicating the distribution of brightness data in an image. A dot is assigned a brightness value ranging from 0 (shadows) to 255 (highlights). The histogram shows how much image data there is at each brightness value. Adjusting the histogram changes the image contrast.

Image File

Images are expressed as collections of dots with varying color and brightness values that are digitized in particular formats for processing by a computer. At the most basic level, an image file contains bitmap information, which is the color information for each dot in each column and row of an image. The various file formats (TIFF, BMP, etc.) use different methods of storing and recalling this information.

Magnification

An expression of the relationship between the scanning resolution and the output resolution stated as a percentage. If the output resolution is set to 720 dpi and the scanning resolution to 360 dpi, then the magnification rate is 50%.

Moiré

The patterns or lines created by overlapping dots in an image. This phenomenon is found when photographs or pictures are scanned from books and magazines at low resolutions. The Descreen function helps to eliminate moiré patterns.

Optical Resolution

An expression of the volume of data per inch (dpi) that can be sampled by a scanner.

Pixel

An abbreviation of picture element, the smallest element on a monitor screen.

Plug-in Software

A program that extends the functionality of an application program. Plug-in Module CS-U is a driver plug-in that adds scanning capabilities to programs such as CanoScan Toolbox and PhotoStudio 2000.

Preview Area

Area at the right of the Plug-in Module CS-U window used to display preview images. Clicking the [Preview] button causes the scanner to scan its platen and reproduce the image in the preview area. Please note, however, that preview images do not get downloaded to the application program in use.

Preview Scan

A low-resolution, trial scan of an object. The image shown in the preview area can be used to adjust the scan area, brightness and color balance before initiating the final scan.

Remove Dust and Scratches

This function is available with a Film Adapter Unit FAU-S13 equipped CanoScan D2400U. It utilizes the properties of infrared light to detect small flecks of dirt or scratches on film and retouches them.

Resolution

The density of the dots used to express an image. Image fineness or coarseness is expressed as the number of dots per inch (dpi). See also DPI.

RGB

A color set of red, green and blue: the three primary colors of light. The scanner picks up light reflected off objects with its red, green and blue sensors. Color printers output color using the complements to the RGB color set, which are cyan, magenta, yellow and black (CMYK). Cyan, magenta and yellow are called the three secondary colors.

Scan Mode

Any one of the various methods used to reproduce image data. Scan modes are distinguished by the number of bits used to describe each pixel. Plug-in Module CS-U features the following scan modes.

- **24 bit Color:** assigns 8 bits of data for each color channel (RGB) in each pixel. Each pixel is therefore assigned 24 bits.
- **42/48 bitColor:** While the Color mode scans at 8 bits per RGB channel, this mode scans at 14 or 16 bits per channel to achieve a particularly high-quality image. Each pixel is expressed with 42 or 48 bits of data.
- **8 bit Grayscale:** assigns 8 bits of data to its single color channel. Each pixel is therefore assigned 8 bits.
- **14/16 bit Grayscale:** While the Grayscale mode scans at 8 bits, this mode scans at 14 or 16 bits to achieve a particularly high-quality image. Each pixel is expressed with 14 or 16 bits of data.
- **Black and White:** assigns 1 bit of data to each pixel.

Scanning

The process of using a scanner to read image data. Scanned data is sent to the computer as image data.

Shadows

The darkest portions of an image scanned in a color or grayscale image mode.

Threshold Value

The dividing value at which a pixel is determined to be either black or white when the image is reproduced as a black and white image. The higher the threshold, the darker the image. The lower the threshold, the brighter the image.

Tone Curve

A function used to adjust image brightness. The tone curve (or gamma curve) is a graphic representation of the relationship of the input from the scanner to the output to the monitor or printer.

Unsharp Mask

A function that sharpens image outlines. Makes an image appear naturally sharper without changing the brightness, contrast or color balance.

White Eyedropper Tool

Tool used to the select the brightest portion of an image in the preview area. Used with the Histogram function to adjust image brightness. When this tool is clicked on the image, all areas that are brighter are set to pure white.

Index

A

Alignment mark *16*
Application
  Compatible *15*
  Stand-alone *15*
Aspect ratio *25*
Auto Tone Adjustment button *7, 40*

B

Black and White *21*
Black Eyedropper button *43*
Brightness *47*
Brightness/Contrast tab *47*
Browser button *7, 11, 23*

C

Calibration *17*
CanoScan Setup Utility CD-ROM *10*
Close box *7, 14*
Color *67*
Color balance *49, 66*
Color balance tab *49*
Color channel *66*
ColorSync *6, 9, 53, 67*
Contrast *43, 67*
Control panel *14*

D

Descreen *55*
Disk space
  Available *21*
  Required *21*
Dot *67*
DPI *67*
Dynamic preview *9, 17*

F

File size *20*
Free memory *7*

G

Gamma tab *51*
Gamma value *50, 67*
Grayscale *68*

H

Highlight mark *42*
Highlights *41*
Histogram *41, 68*
Histogram tab *42*

I

Image file *68*
Image menu *40*
Image size *7*
Install *6, 10*

L

Load Settings file *53*

M

Magnification *7, 11, 19, 20, 68*
Menu bar *14*
Moiré *55, 68*

O

Optical resolution *59, 68*
Output device *7, 11, 18, 25, 59*

P

Pixel *69*
Plug-in Software *69*
Preferences *25*
Preview *17*
Preview area *69*
Preview button *7, 17*
Preview scan *17, 69*
Preview setting *26*
Preview window *7, 14, 17, 26*
Preview window size *26*

R

Recall settings file *57*
Required memory *7*
Reset Default Settings *27*
Resolution *7, 11, 19, 69*
RGB *14, 69*
RGB values *14*
Rotating the image *24*
Rotation button *7, 24*

S

Save Scanned image *12, 34*
Save Settings file *57*
Scan *12, 33*
Scan area *11, 30*
Scan button *7, 12, 33*
Scan Mode
  Black and White *21*
  Color (24/42/48 bit) *21*
  Grayscale (8/14/16 bit) *21*
Scan mode *7, 11, 21, 70*
Scanning *70*
Scanning resolution *19, 59*
Screen gamma value *51*
Settings file *57*
Shadow mark *42*
Shadows *41, 70*
Special features *9*
Start Plug-in Module CS-U *10*

T

Threshold *52*
Threshold value *52, 70*
Tone Adjustment *40*
Tone Adjustment button *7, 40*
Tone Adjustment dialog *36*
Tone curve *44, 70*
Tone curve tab *45*
Tone curve value *46*

U

Unit *26*
Unsharp mask *54, 70*

W

White Eyedropper button *43*
White Eyedropper tool *70*

Z

Zoom In button *7*
Zoom Out button *7*
Zooming *31*
  Zoom in *32*
  Zoom out *32*
  Zoom Reset *32*

Canon Customer Support Help Desk

CANON INC.
30-2, Shimomaruko 3-chome, Ohta-ku
Tokyo 146-8501, Japan

CANON U.S.A., INC.
Digital Home and Personal Systems Division
2995 Redhill Avenue
Costa Mesa, CA 92626, U.S.A.
1-800 OK CANON
http://www.ccsi.canon.com

CANON CANADA INC.
6390 Dixie Road, Mississauga
Ontario L5T 1P7, Canada
1-800 OK CANON
http://www.canon.ca

CANON LATIN AMERICA, INC.
6505 Blue Lagoon Drive, Suite 325
Miami, Florida 33126, U.S.A.

CANON MEXICANA, S. de R.L. de C.V.
Anillo Periferico Sur No. 4124, Torre Zafiro (II)
Colonia
Ex-Rancho de Anzaldo, Piso 5 y 6, Mexico D.F.
Tel. (525) 5490-2000

CANON PANAMA, S.A.
Apartado 7022, Panama 5
Rep. de Panama
Tel. (507) 279-8900

CANON CHILE, S.A.
Ave. Manquehue Norte #1337, Piso 3,
Casilla 187-9,
Santiago, Chile
Tel. (562) 366-6600

CANON ARGENTINA, S.A.
Ave. Corrientes 420 (1043)
Buenos Aires, Argentina
Tel. (5411) 432-59800

CANON EUROPA N.V.
P.O. Box 2262 1180 EG Amstelveen,
The Netherlands

CANON (UK) LTD.
Woodhatch, Reigate
Surrey RH2 8BF, United Kingdom
For technical support, please contact Canon Helpdesk.
Helpdesk:
P.O. Box 431, Wallington, Surrey SM6 0XU
TEL: (08705) 143 723
FAX: (08705) 143 340
For sales enquiries: (0121) 666-6262

CANON FRANCE S.A.
17, quai du Président Paul-Doumer
92414 Courbevoie Cedex, France
Tél.01 4199 7777 Fax.01 4199 7951
Hotline: Tél.01 4199 7070

CANON DEUTSCHLAND GmbH
Postfach 528, 47705 Krefeld, Germany
CANON- Hotline-Service
Customer Support: (0 21 51) 349-555
Info-Desk: (0 21 51) 349-566
Mailbox: (0 21 51) 349-577
Telefax: (0 21 51) 349-588

CANON ITALIA S.p.A
Palazzo L, Strada 6,
20089 Milanofiori-Rozzano (MI), Italy
TEL: 02/8248. 1 FAX: 02/8248. 4604
Pronto Canon 02/8249. 2000
http://www.canon.it

CANON BENELUX NEDERLAND N.V.
Neptunusstraat 1, 2132 JA Hoofddorp
The Netherlands
Tel: 023-5 670 123 Fax: 023-5 670 124
Helpdesk: 023-5 681 681

CANON BENELUX BELGIUM N.V./S.A.
Bessenveldstraat 7, 1831 Diegem, Belgium
Tel: 02 7220411 Fax: 02 7213274
Helpdesk: 02 7220404

CANON GmbH
Zetschegasse 11, 1232 Wien, Austria

CANON (SCHWEIZ) A.G.
Industriestrasse 12, CH-8305 Dietlikon
Switzerland
Tel: (01) 835 61 61 Fax: (01) 835 68 60
Hotline: 157 30 20

CANON ESPAÑA S.A.
C/Joaquin Costa No 41, 28002
Madrid, Spain
Help Desk: 906.301255
Tel.: 91-5384500 Fax.: 91-4117780

CANON DANMARK
Vasekær 12, DK-2730 Herlev, Denmark
Hotline: 44 88 26 66
http://www.canon.dk

CANON NORGE AS
Hallagerbakken 110, Boks 33, Holmlia, 1210
Oslo 12, Norway
Tlf: 2262 9321 FAX. 2262 0615

CANON SVENSKA AB
Gustav III:s Boulevard 26, S-169 88 Solna, Sweden
Tel 08-744 85 00
Fax 08-744 64 65
http://www.canon.se

CANON OY AB
Kornetintie, 3, 00380 Helsinki, Finland
Puhelin: 010 544 20
Helpdesk: 0600-0-22606
(maksu 14,80 mk/min)
Fax: 010 544 4571

CANON SINGAPORE PTE. LTD.
79 Anson Road #09-01/06
Singapore 079906
http://www.canon-asia.com

CANON MARKETING SERVICES PTE. LTD.
No. 1, Jalan Kilang Timor
#09-00 Pacific Tech Centre
Singapore 159303
Tel: 65-7998888, Fax: 65-2736786,
Hotline: 65-3342726
http://www.canon.com.sg

CANON MARKETING (MALAYSIA) SDN. BHD.
Block D, Peremba Square
Saujana Resort, Section U2, 40150 Shah Alam
Selangor Darul Ehsan, Malaysia
Tel: 603-7446000, Fax: 603-7446048,
Helpdesk: 603-7446008/9
Enquiry: print&scan@canon.com.my
http://www.canon.com.my

CANON MARKETING (THAILAND) CO. LTD.
179/34-45 Bangkok City Tower, 9th-10th Floor
South Sathorn Road, Thungmahamek,
Sathorn, Bangkok 10120, Thailand
Tel: 662-3449999, Fax: 662-3449968
http://www.canon.co.th

CANON MARKETING (PHILIPPINES) INC.
Marvin Plaza Building, 2153 Don Chino Roces Ave,
Makati City, Metro Manila, Philippines
Tel: 632-8126047, Fax: 632-8120067/ 8109797

CANON INDIA PVT LTD.
Neela Gagan, Mandi Road,
Mehrauli, New Delhi-110030, India
Tel: 91-11-6806572, Fax: 91-11-6807180

CANON HONGKONG CO., LTD.
9/F, The Hong Kong Club Building
3A Chater Road, Central, Hong Kong
TEL: (852) 2739 0802
FAX: (852) 2739 6428

CANON AUSTRALIA PTY. LTD.
1 Thomas Holt Drive, North Ryde, Sydney
N.S.W. 2113, Australia
Info-Line: (02) 9805 2864

CANON NEW ZEALAND LTD.
Fred Thomas Drive, Takapuna
P.O. Box 33-336, Auckland, New Zealand
Info-Line: 0900-522666

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http://www.adobe.com

ARCSOFT, INC.
http://www.arcsoft.com

SCANSOFT, INC.
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